

KIC 009101496

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009101496-01	OBS	1915.01	6.562258	132.612070	255.0	4.142	33.8	36.6	1.81	5878	3.41	656.42
009101496-02	OBS	1915.02	67.845412	149.488324	236.0	12.171	11.2	12.3	1.81	5878	3.04	29.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009101496-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009101496-02	OBS	PC	0.81	0	0	0	0	NO_COMMENT

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

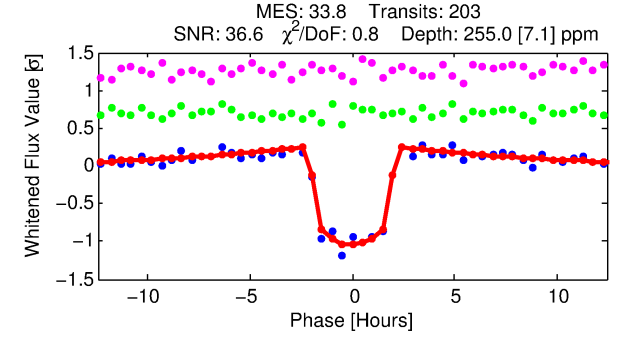
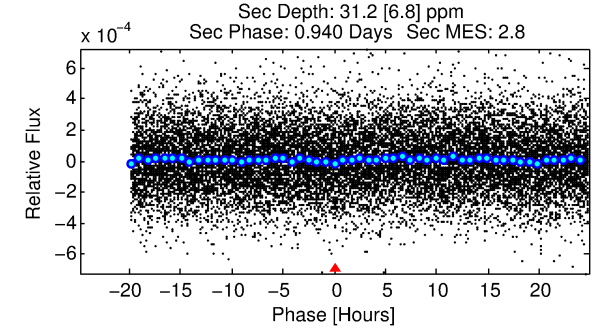
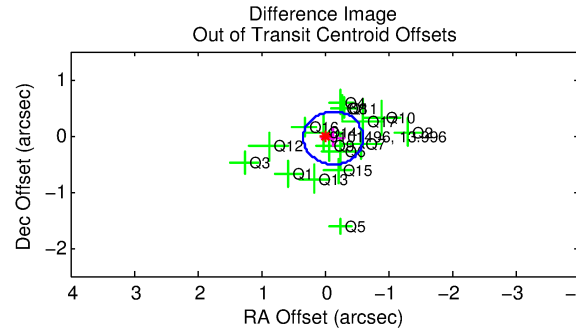
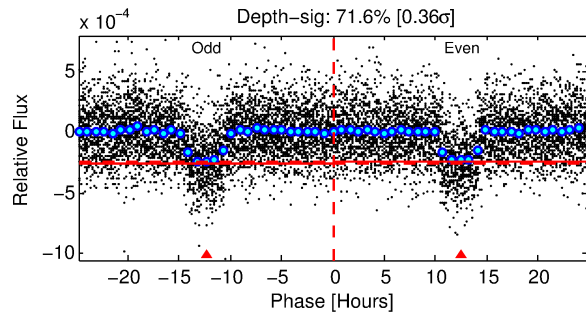
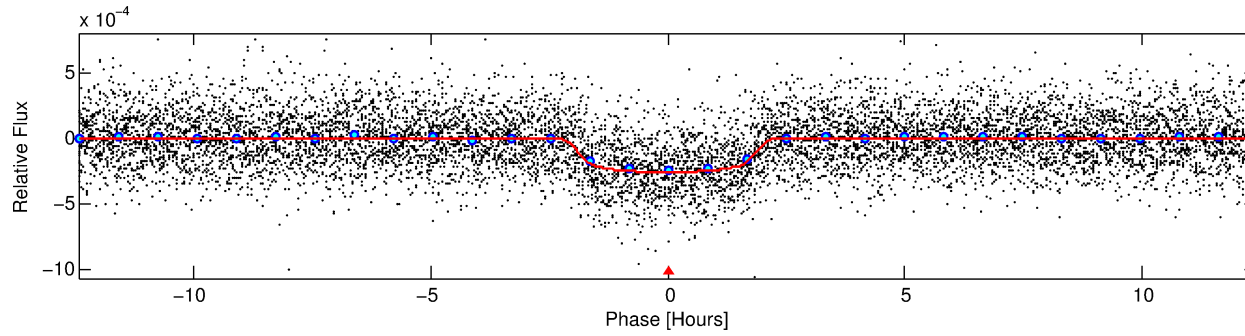
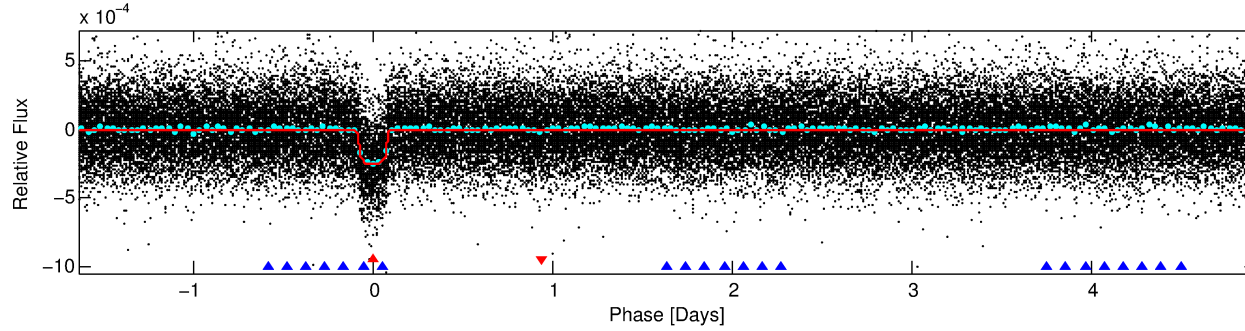
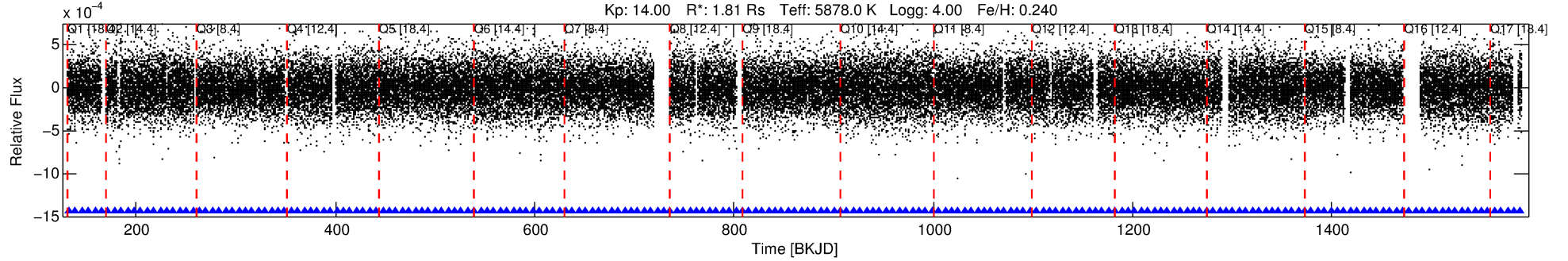
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009101496-01

No Significant Match Found

DV One-Page Summary

KIC: 9101496 Candidate: 1 of 2 Period: 6.562 d
KOI: K01915.01 Name: Kepler-335b Corr: 0.978



DV Fit Results:

Period = 6.56226 [0.00002] d
Epoch = 132.6121 [0.0018] BKJD
Rp/R* = 0.0173 [0.0017]
a/R* = 5.99 [2.67]
b = 0.89 [0.11]
Seff = 656.42 [232.20]
Teq = 1291 [114] K
Rp = 3.41 [0.92] Re
a = 0.0731 [0.0165] AU
Ag = 7.89 [3.57] [1.93 σ]
Teffp = 3345 [254] K [7.38 σ]

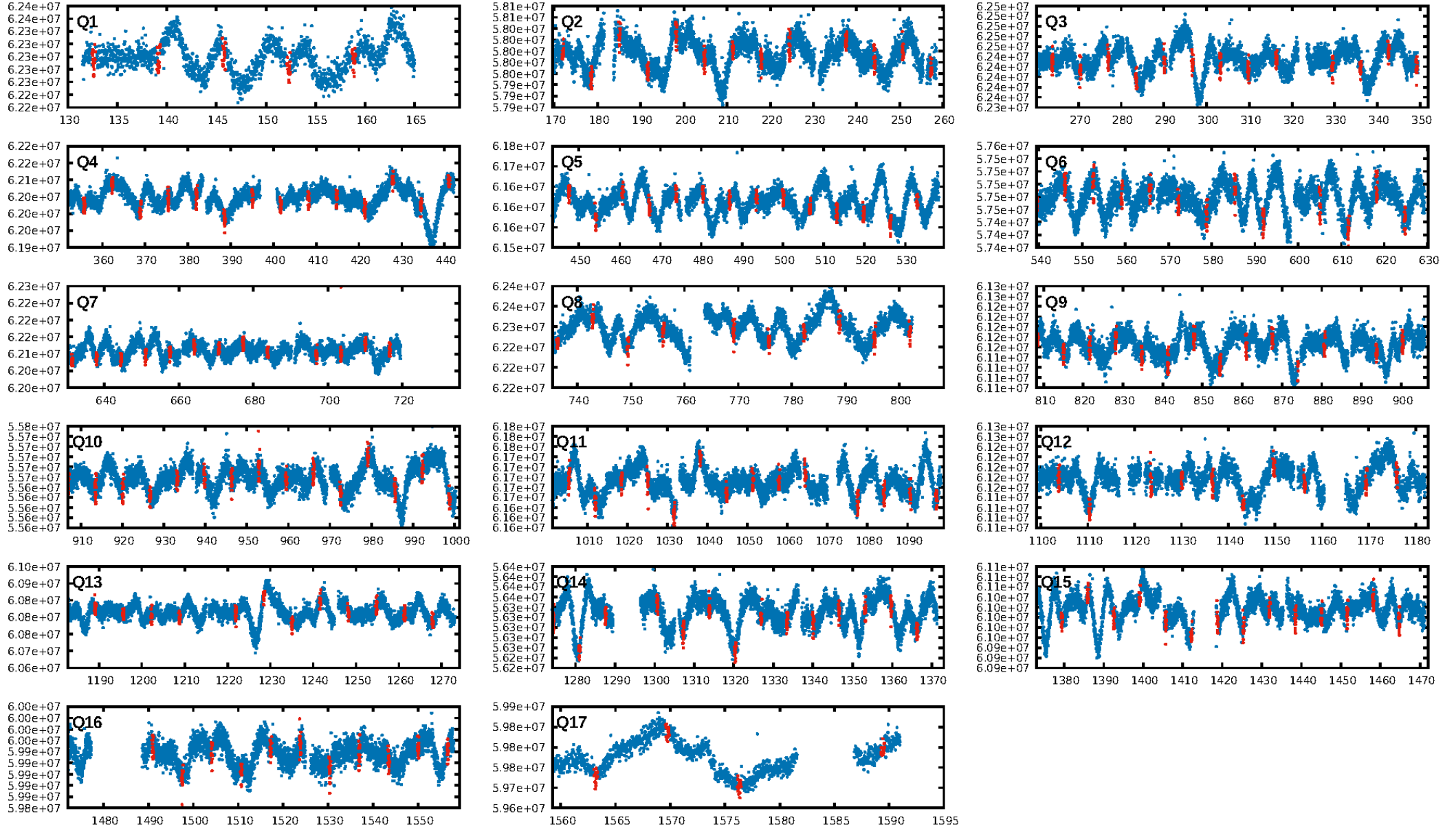
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [114.41 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.72e-240
RollingBand-fgt: 1.00 [194/194]
GhostDiagnostic-chr: 3.661
Centroid-sig: 76.3%
Centroid-so: 0.135 arcsec [0.41 σ]
OotOffset-rm: 0.139 arcsec [0.88 σ]
KicOffset-rm: 0.144 arcsec [0.84 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

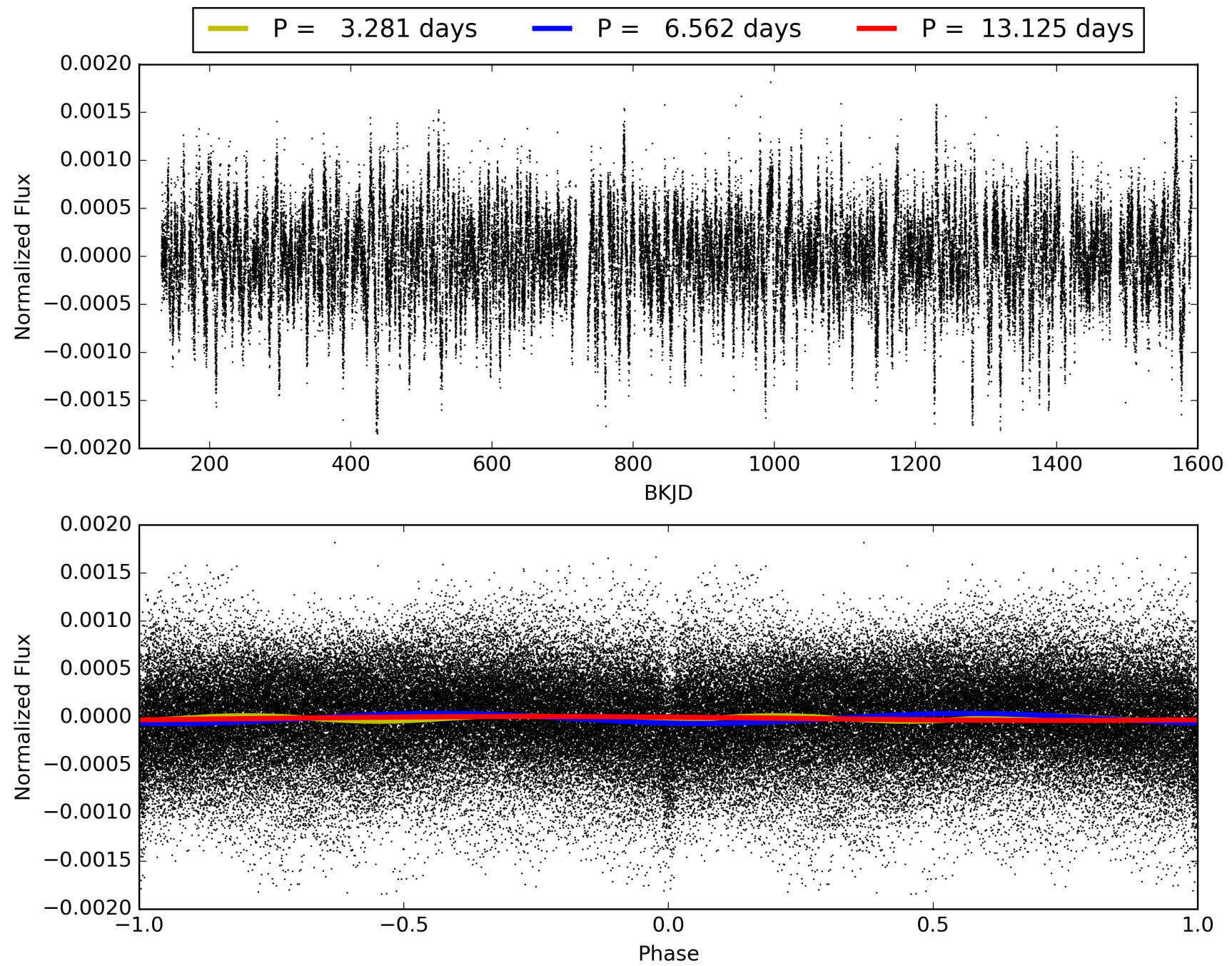
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:26:58 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009101496-01, PDC Light Curves

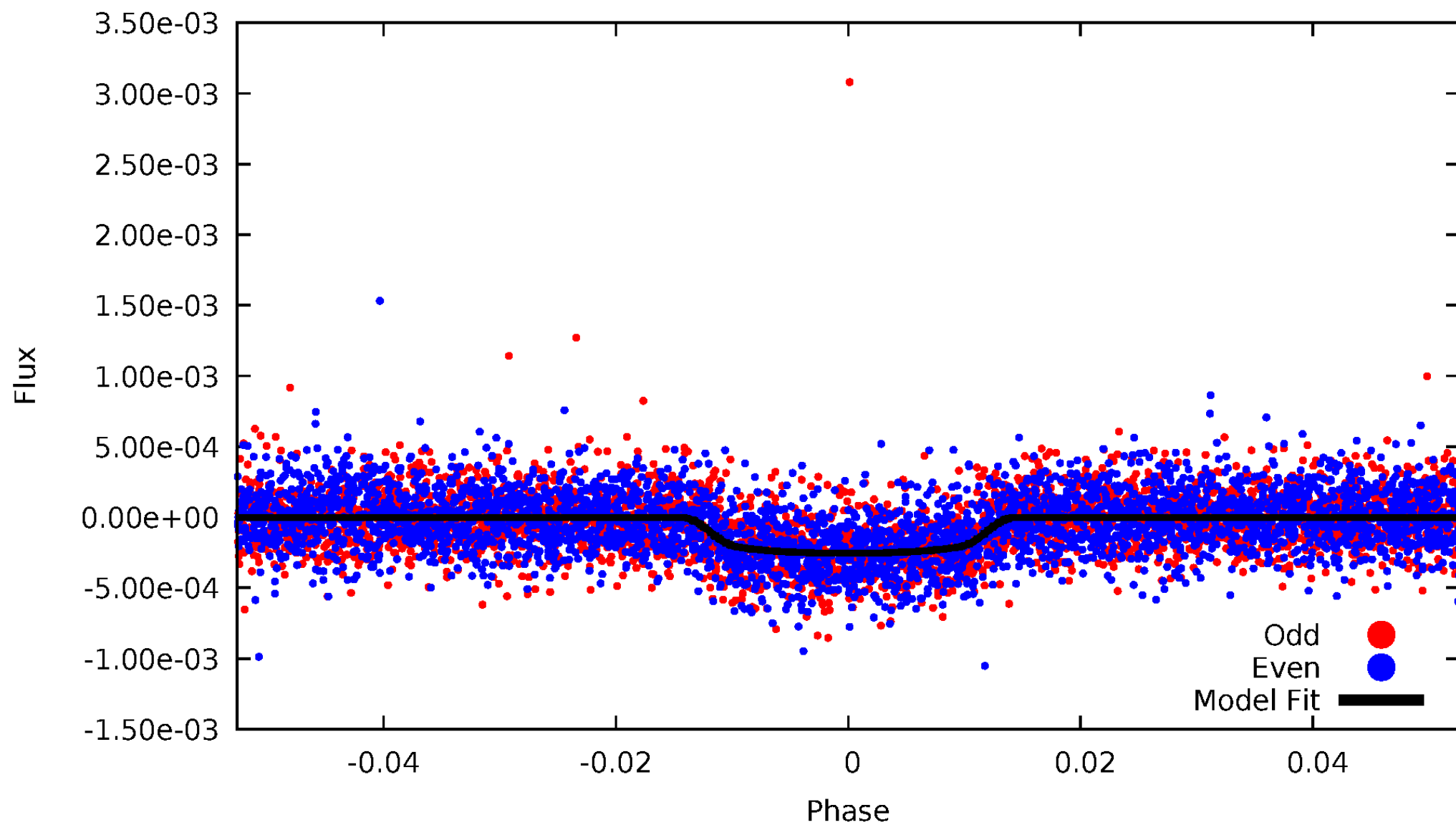


TCE 009101496-01



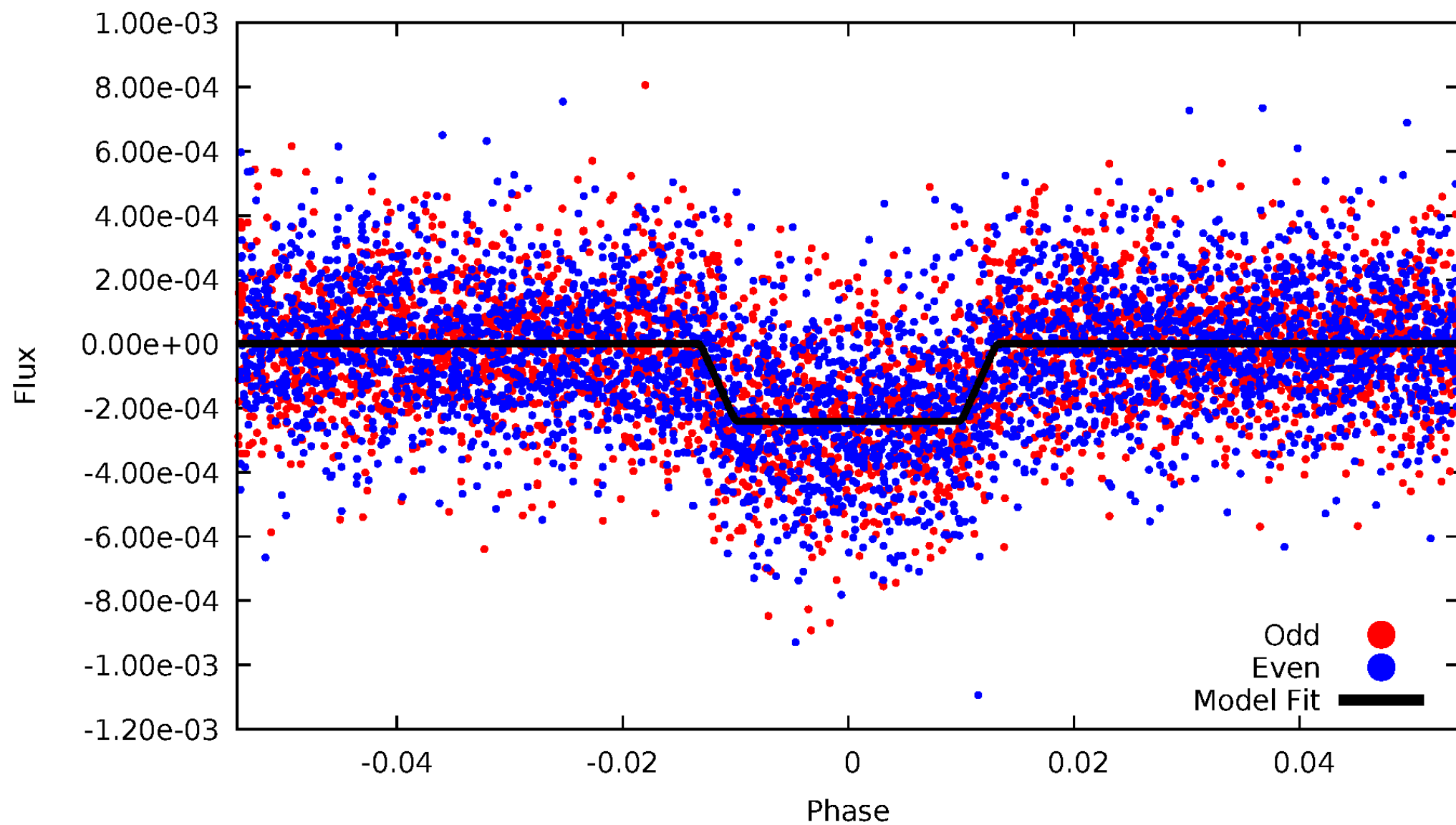
DV Odd/Even

TCE 009101496-01

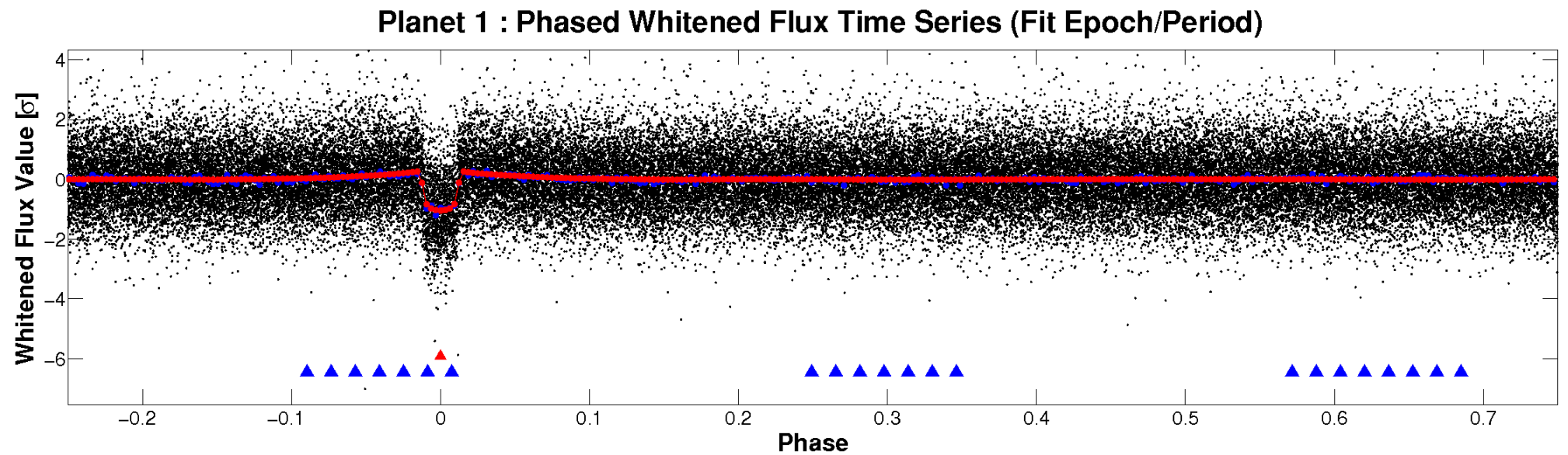
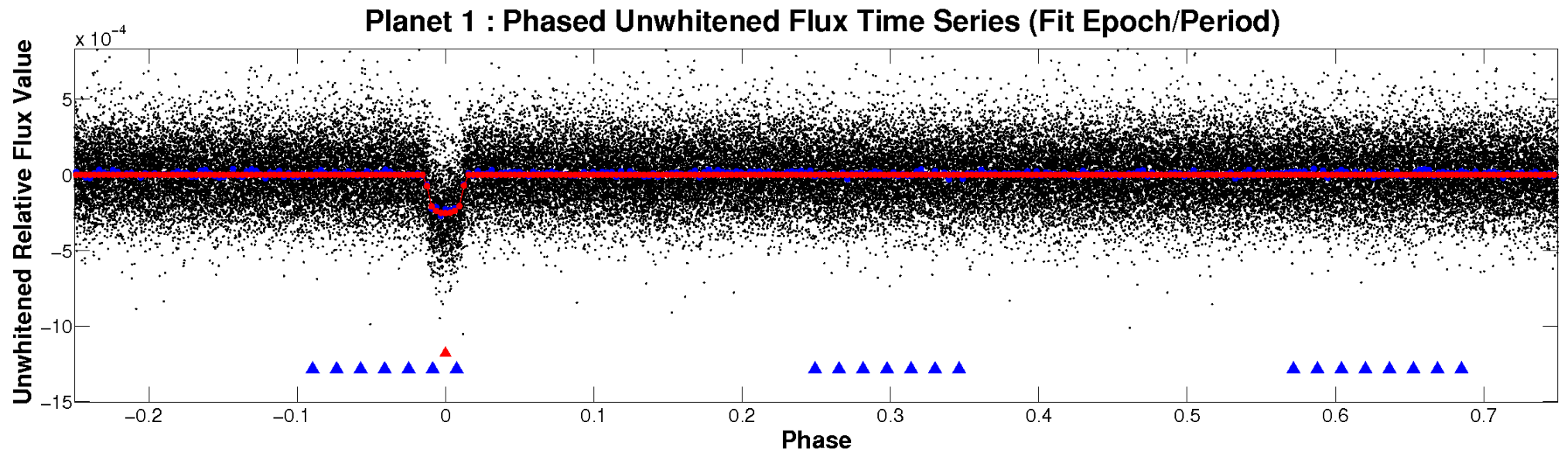


ALT Odd/Even

TCE 009101496-01

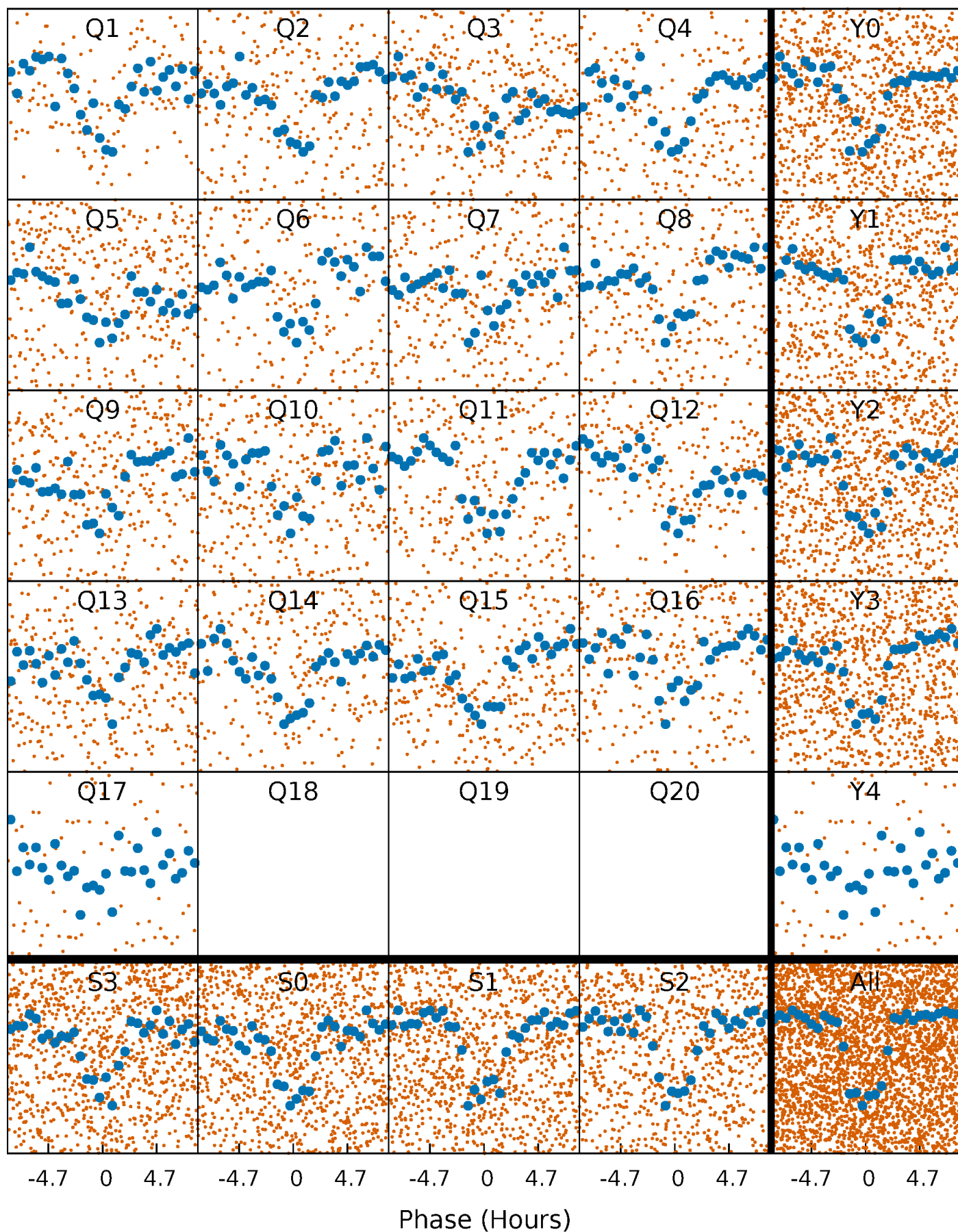


Non-Whitened Vs. Whitened Light Curve



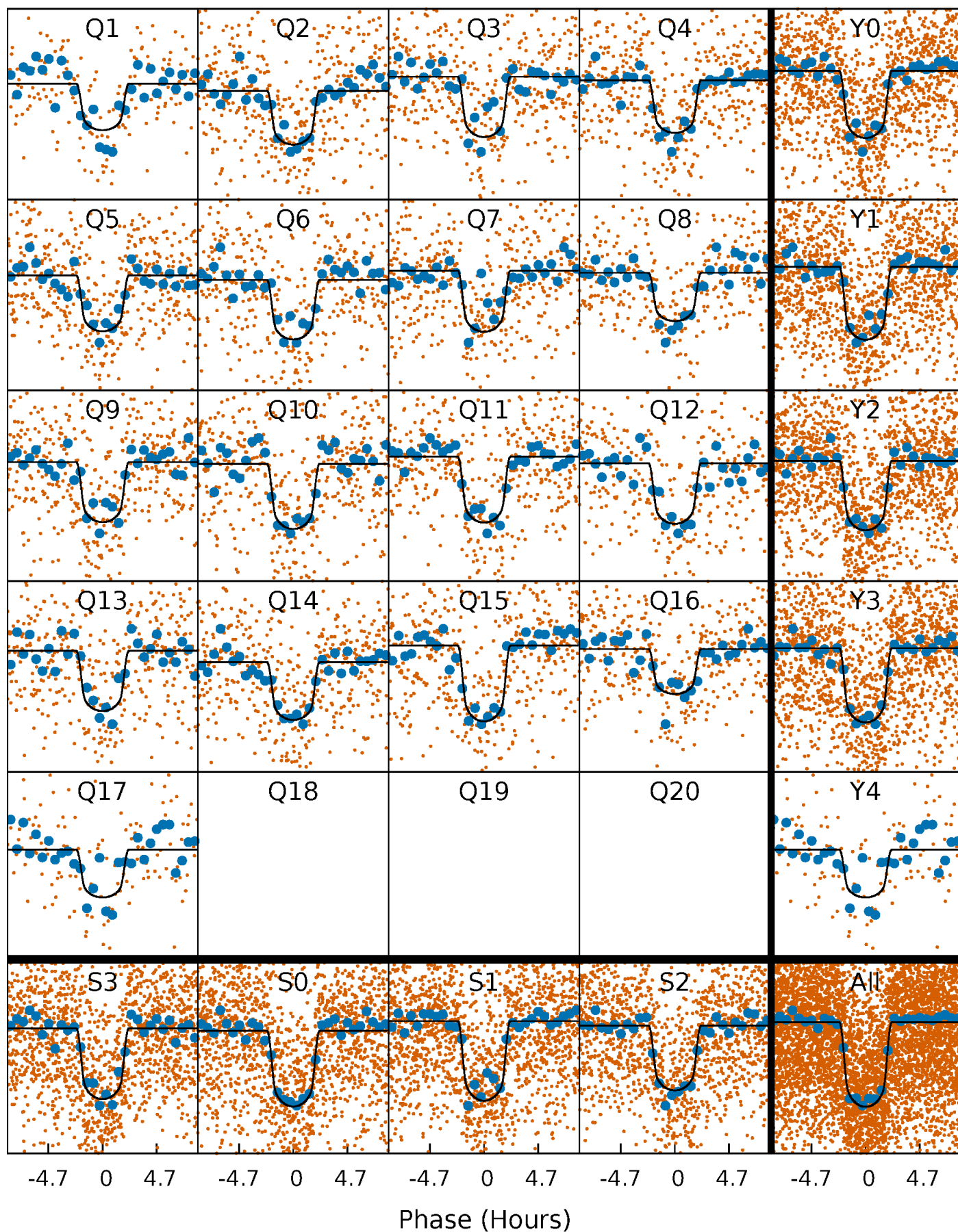
PDC Quarter-Phased Transit Curves

TCE 009101496-01 P= 6.562258 Days $T_0=132.612070$ (BKJD)



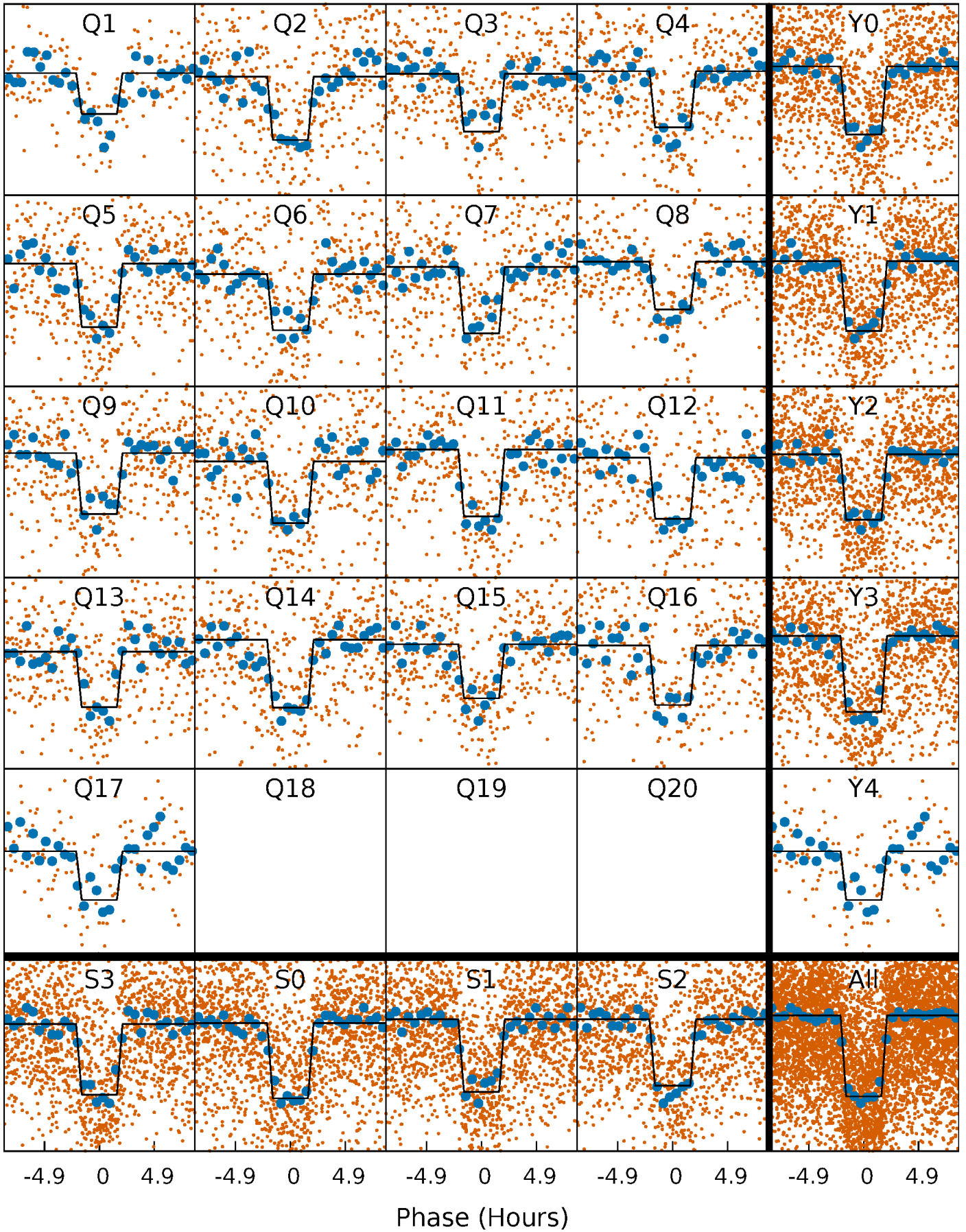
DV Quarter-Phased Transit Curves

TCE 009101496-01 P= 6.562258 Days $T_0=132.612070$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

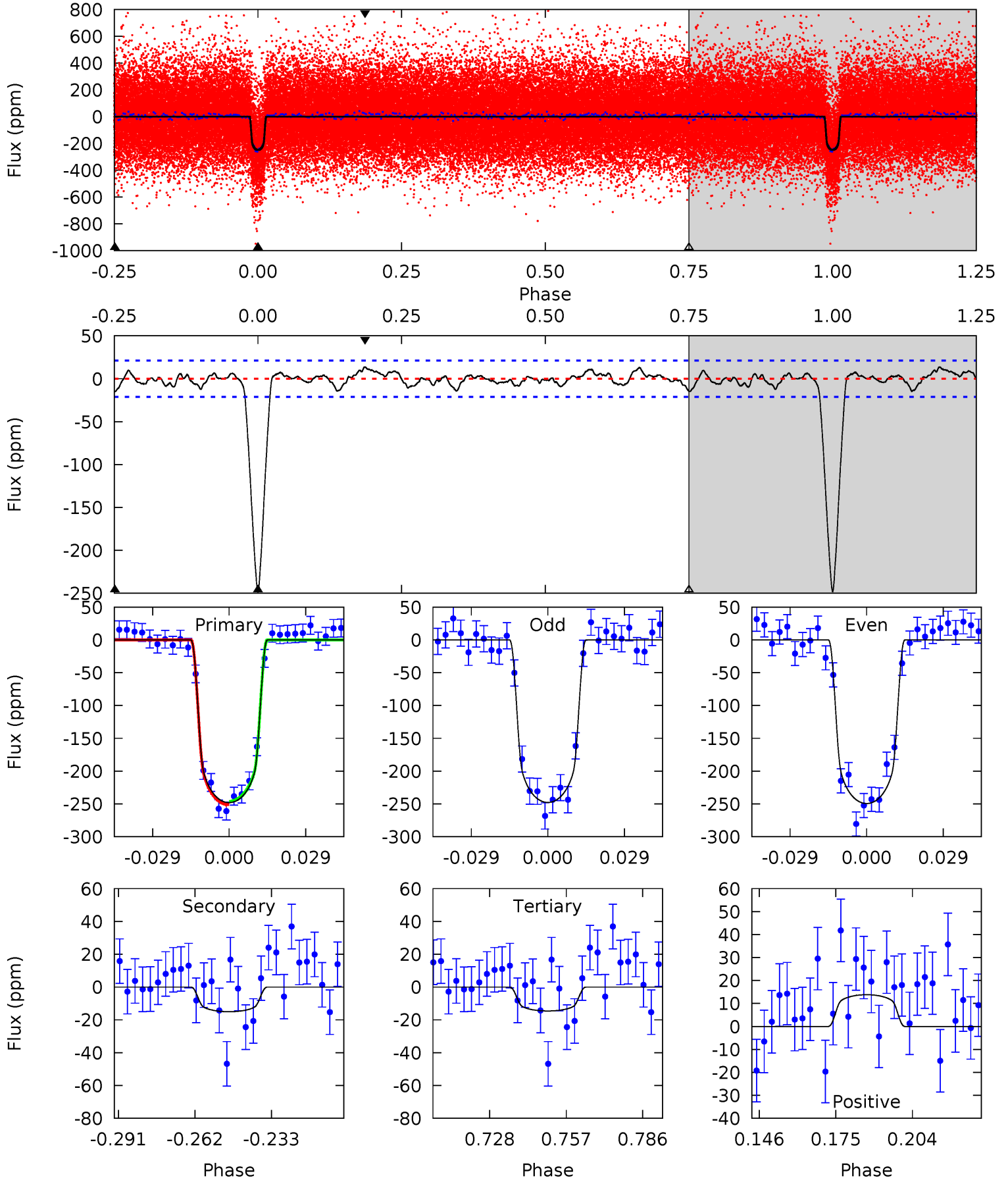
TCE 009101496-01 P= 6.562312 Days $T_0=132.606276$ (BKJD)



DV Model-Shift Uniqueness Test

009101496-01, P = 6.562258 Days, E = 126.049812 Days

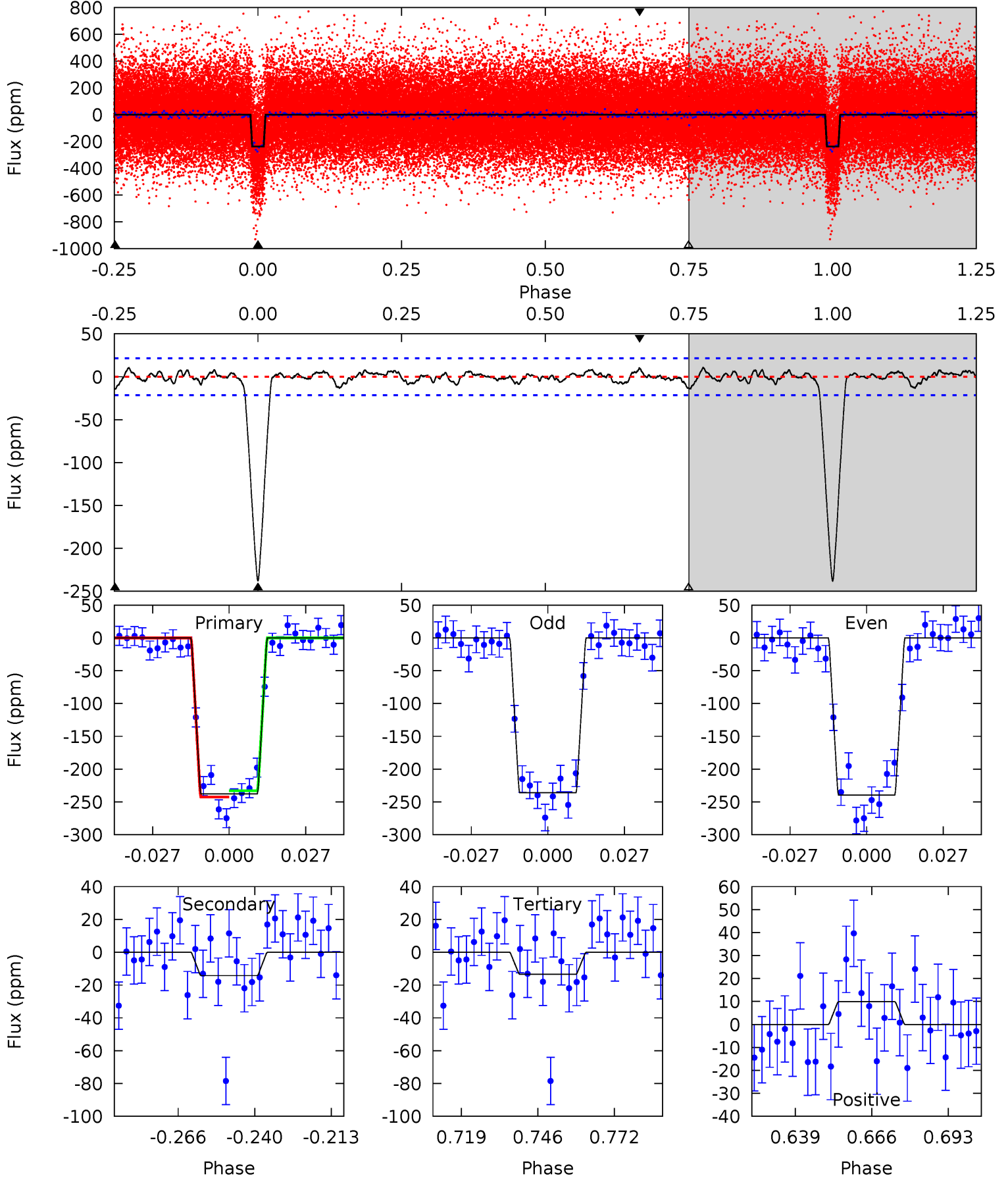
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.5	3.42	3.32	3.14	4.82	2.18	1.26	53.2	53.4	0.10	0.28	0.19	1.03	0.05	0.57



Alt Model-Shift Uniqueness Test

009101496-01, P = 6.562312 Days, E = 126.043964 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.4	3.19	3.02	2.22	4.83	2.22	0.96	50.4	51.2	0.18	0.98	0.37	0.98	0.04	1.07



Stellar Parameters For KIC 009101496

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5878^{+117}_{-117}	$4.005^{+0.196}_{-0.084}$	$0.240^{+0.150}_{-0.100}$	$1.812^{+0.281}_{-0.457}$	$1.212^{+0.133}_{-0.133}$	$0.287^{+0.314}_{-0.078}$
	+2%/-2%	+5%/-2%	+62%/-42%	+16%/-25%	+11%/-11%	+109%/-27%
Source	SPE58	SPE58	SPE58	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009101496-01 / KOI 1915.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-15 ± 4	$3.36^{+0.52}_{-0.50}$	1792^{+81}_{-110}	3300^{+182}_{-216}	$3.989^{+2.036}_{-1.435}$
Alt.	-14 ± 4	$2.99^{+0.47}_{-0.46}$	1783^{+92}_{-106}	3378^{+209}_{-240}	$4.687^{+2.399}_{-1.781}$

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

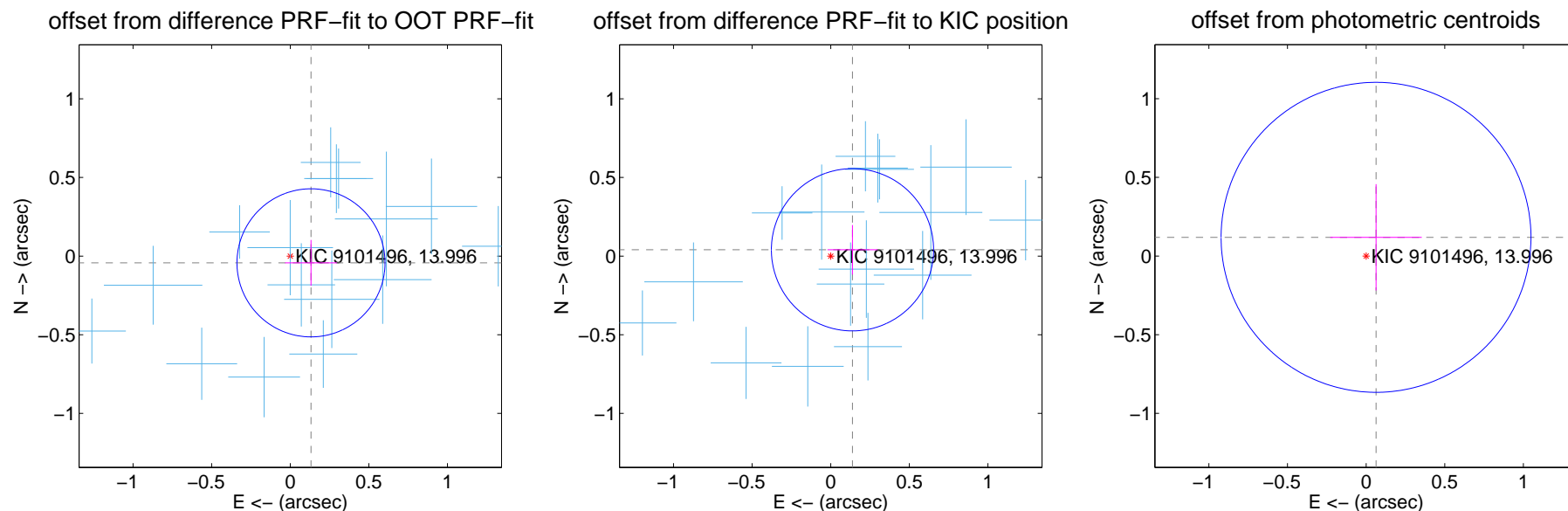
DV Centroid Data

Supplemental centroid analysis for 009101496-01. Kepler magnitude: 14.00. Transit SNR 36.58

There are 17 quarters with good PRF difference image offsets

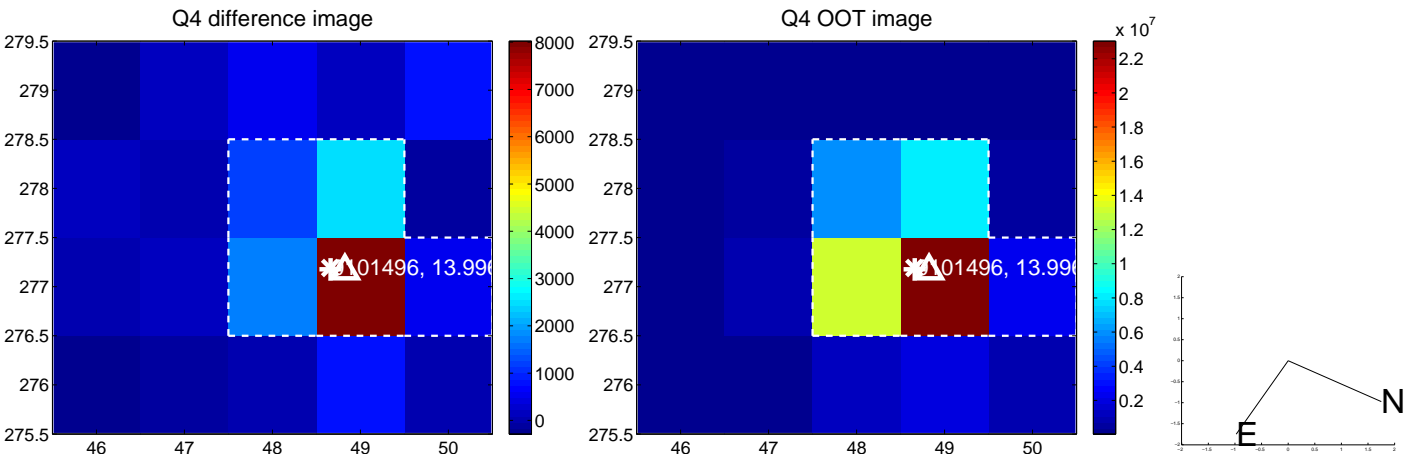
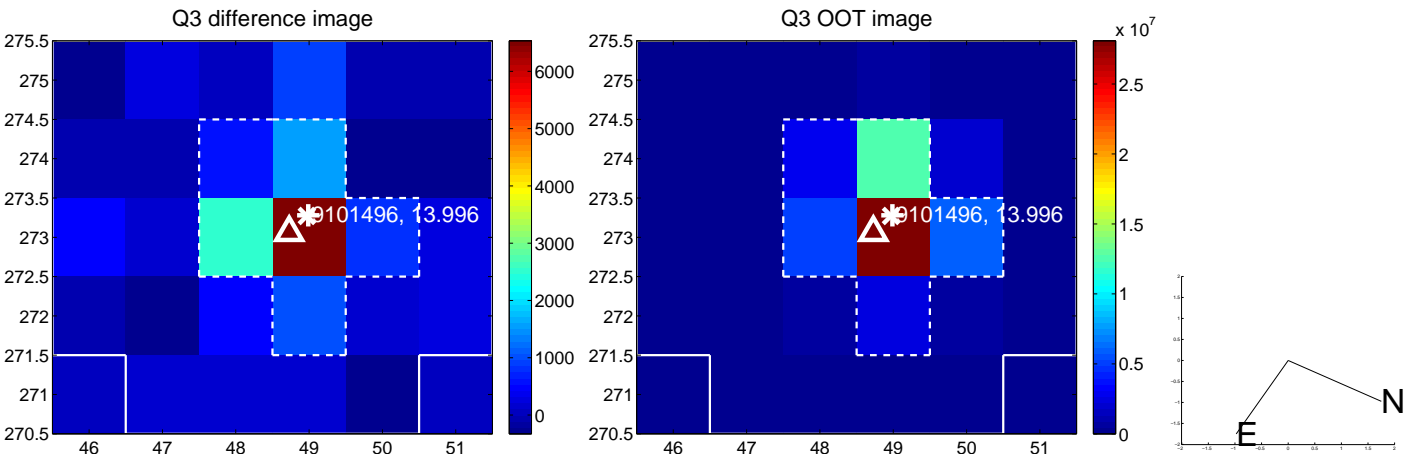
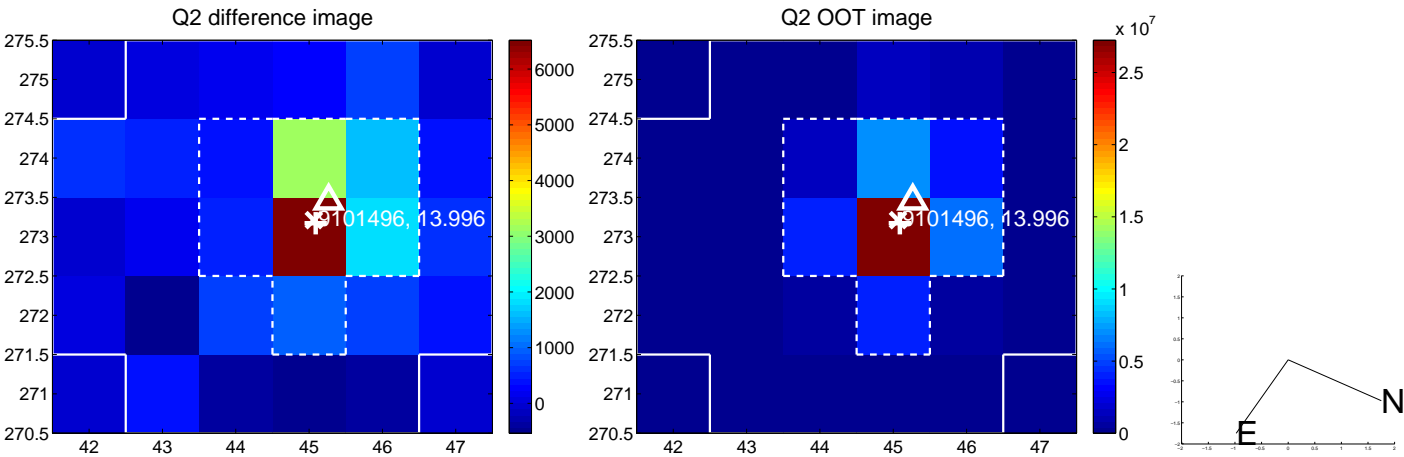
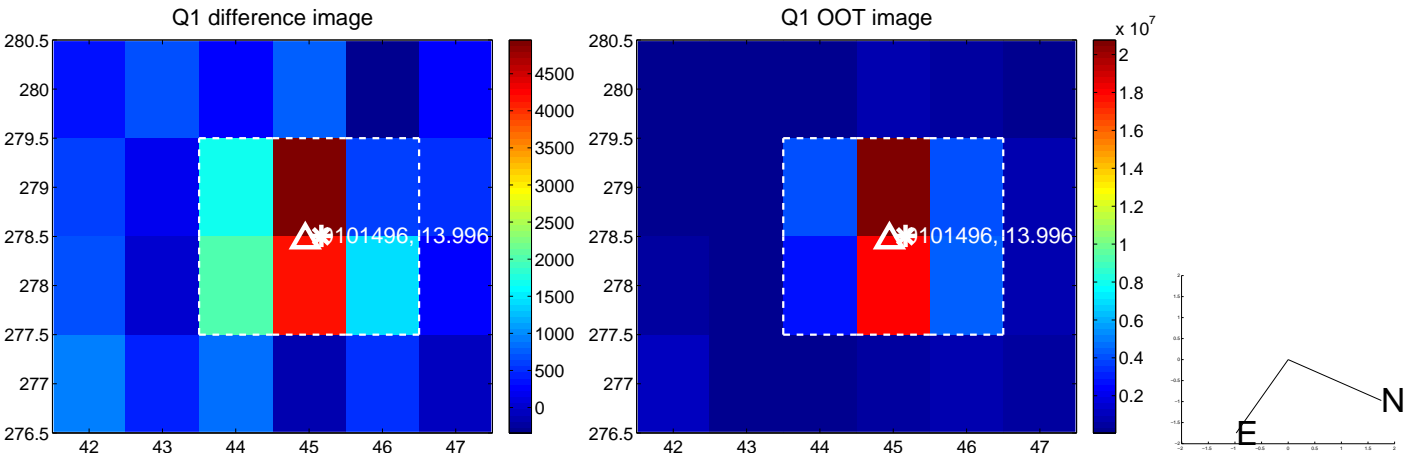
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.139 ± 0.157	0.88	-0.132 ± 0.165	-0.043 ± 0.146
PRF-fit source offset from KIC position	0.144 ± 0.172	0.84	-0.139 ± 0.159	0.040 ± 0.157
photometric centroid source offset	0.13 ± 0.33	0.41	-0.06 ± 0.29	0.12 ± 0.34

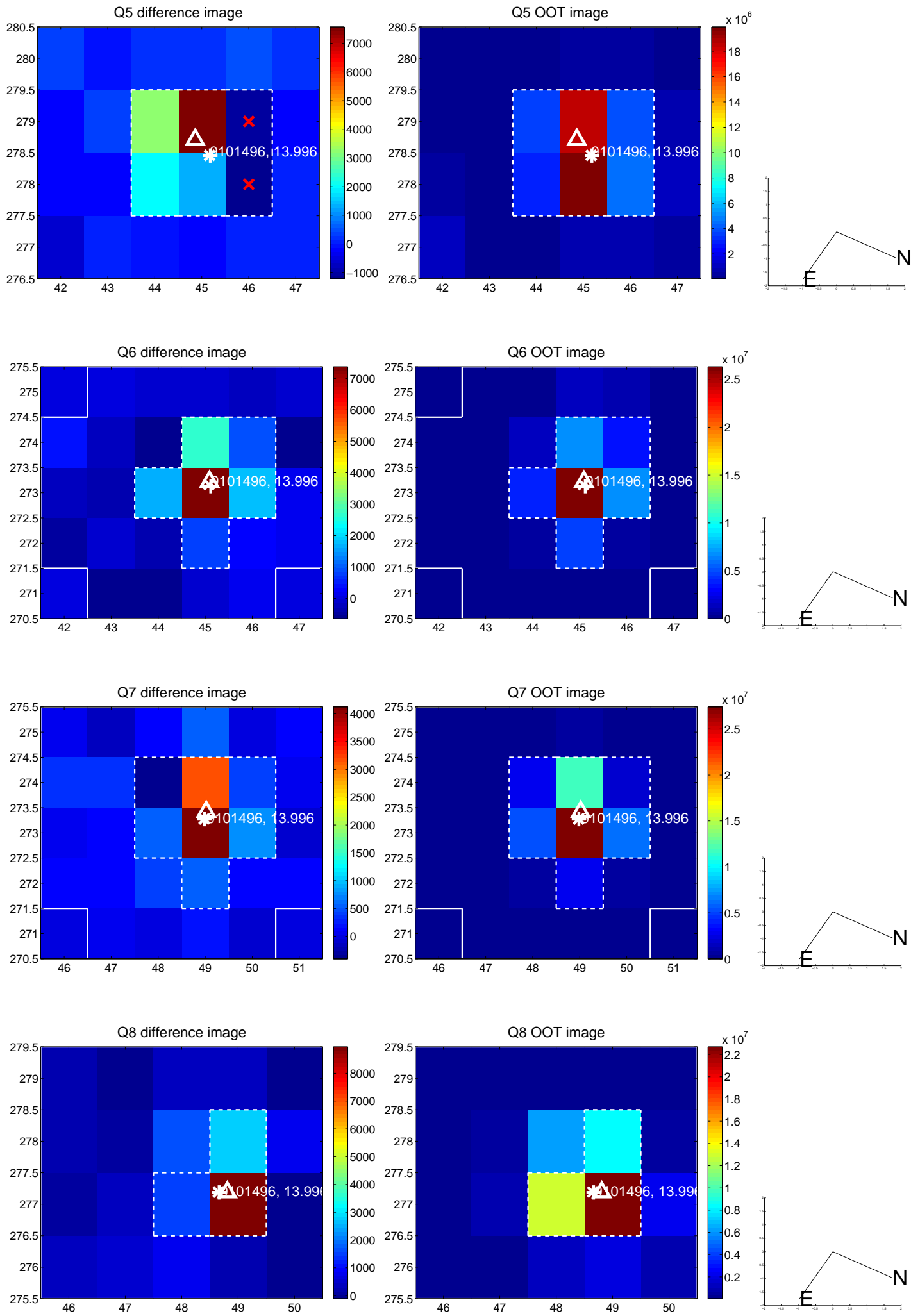


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

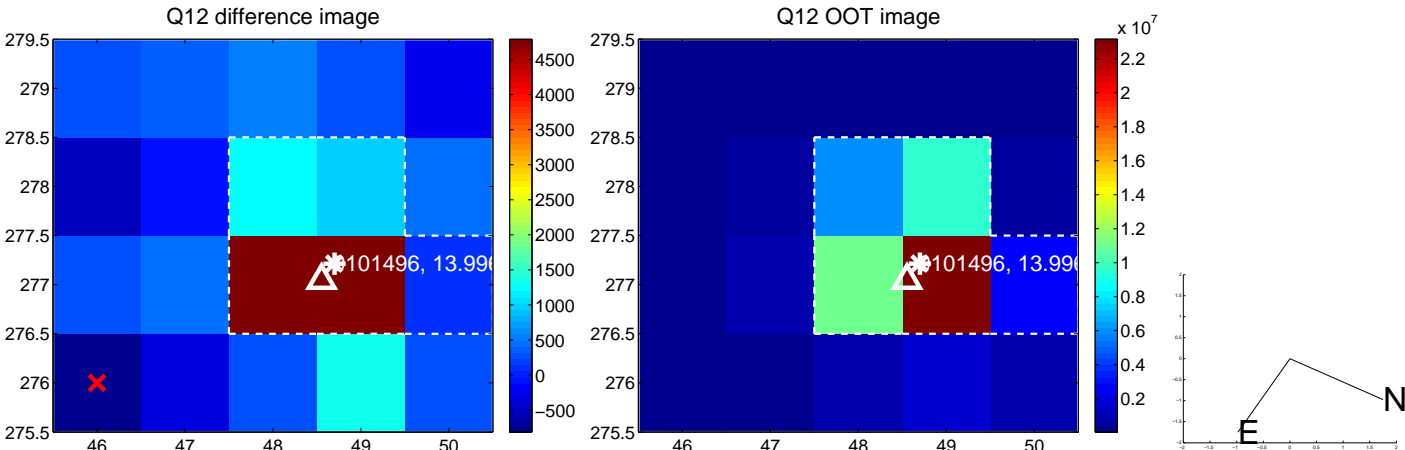
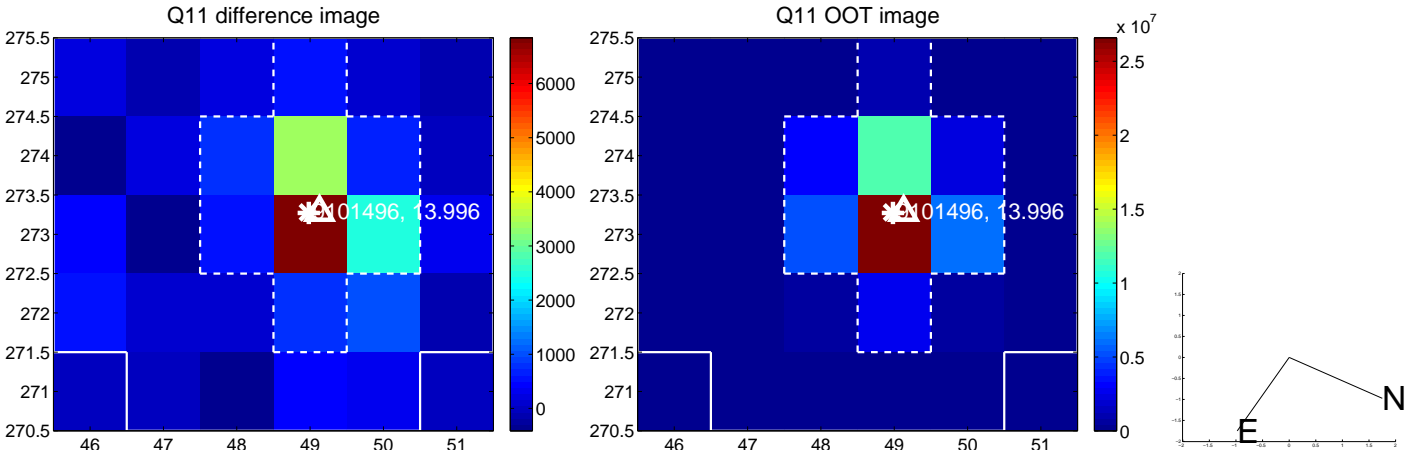
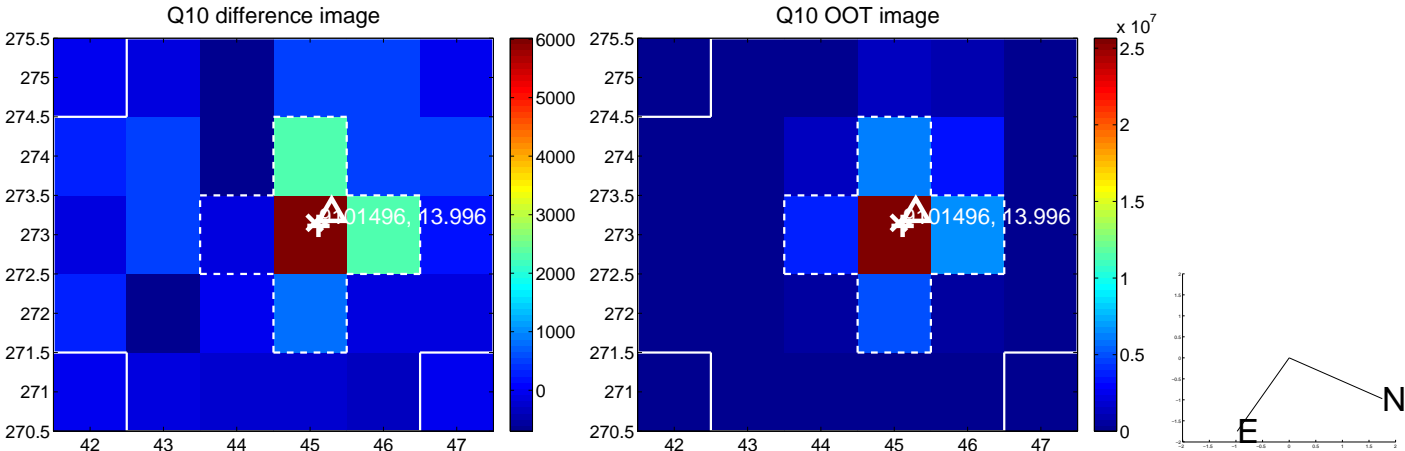
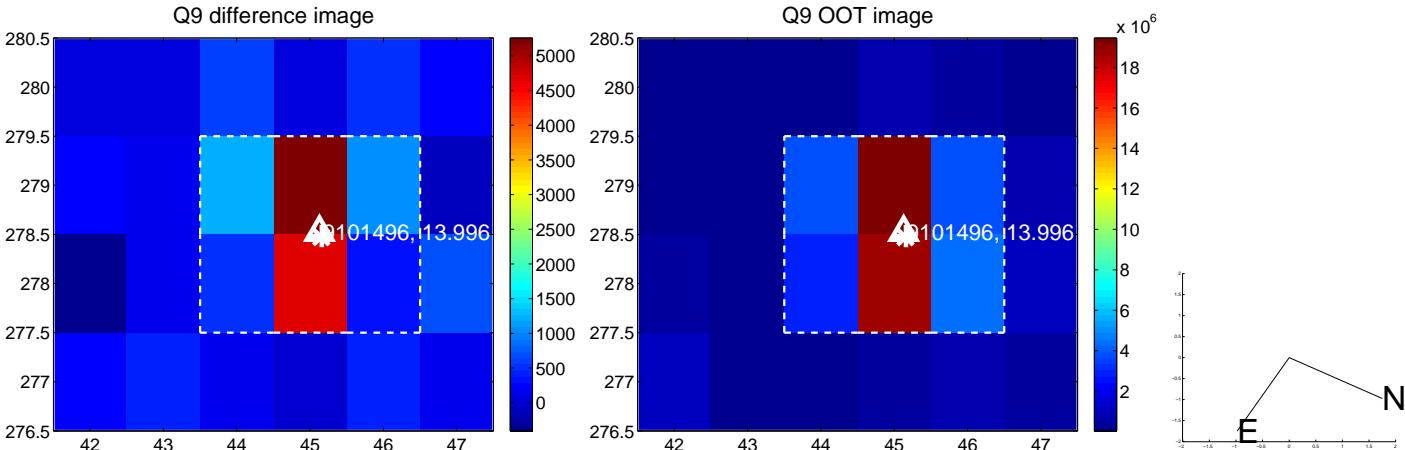
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



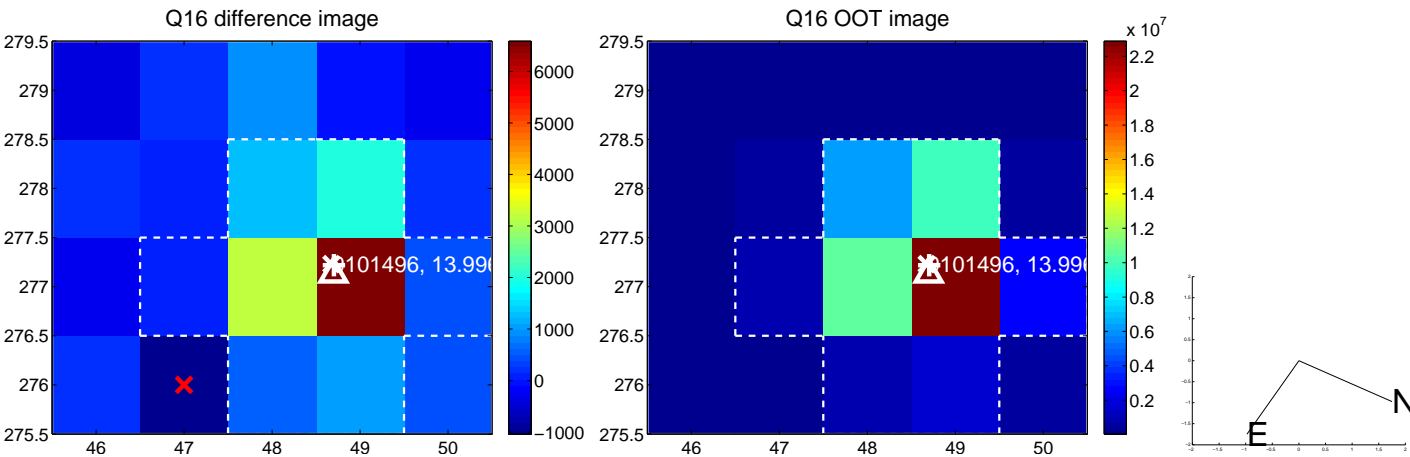
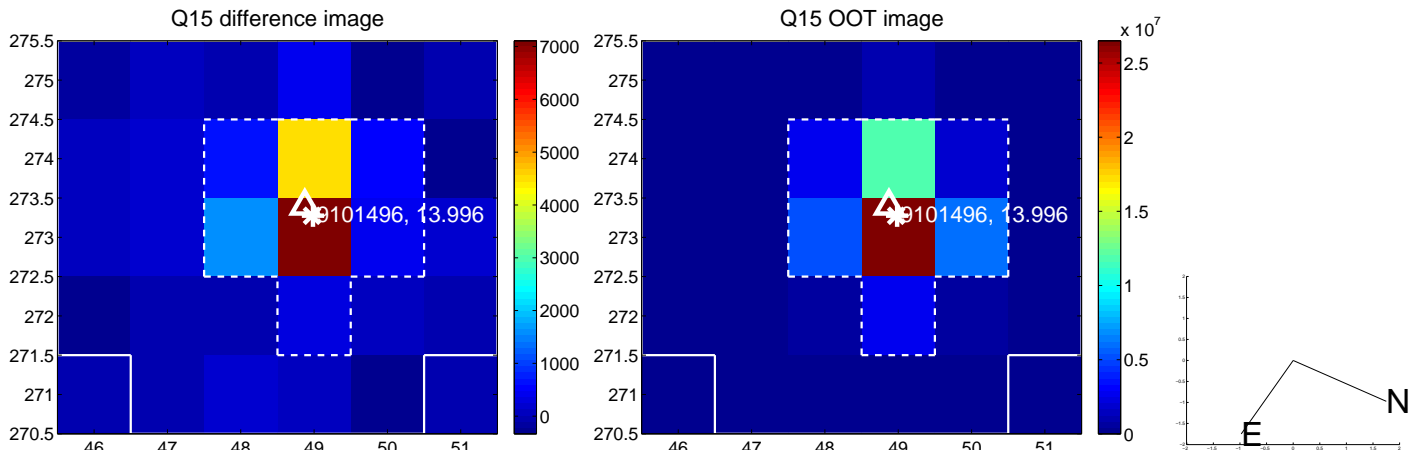
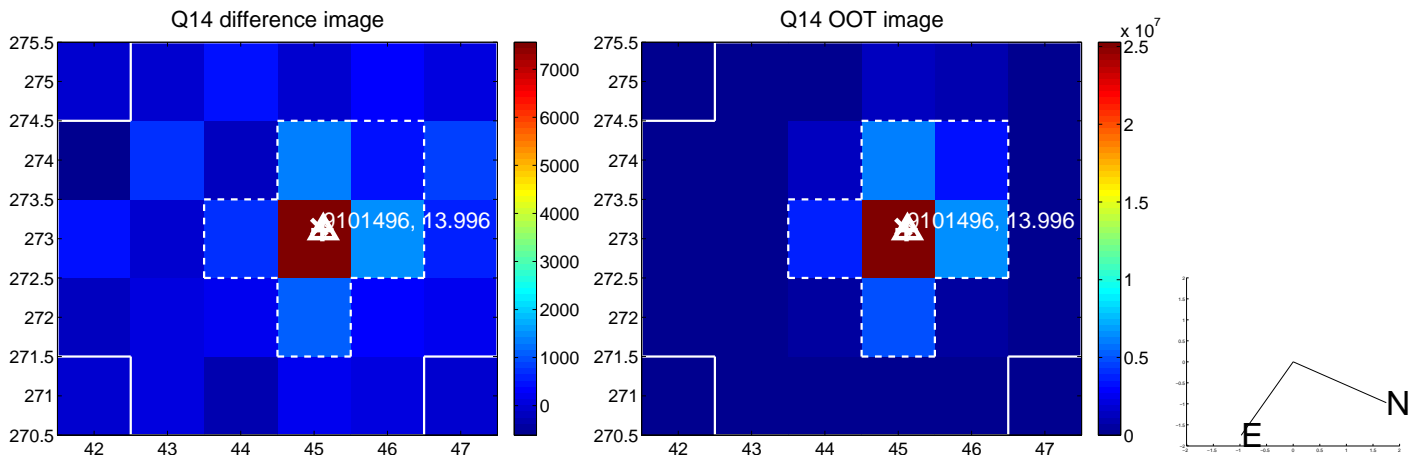
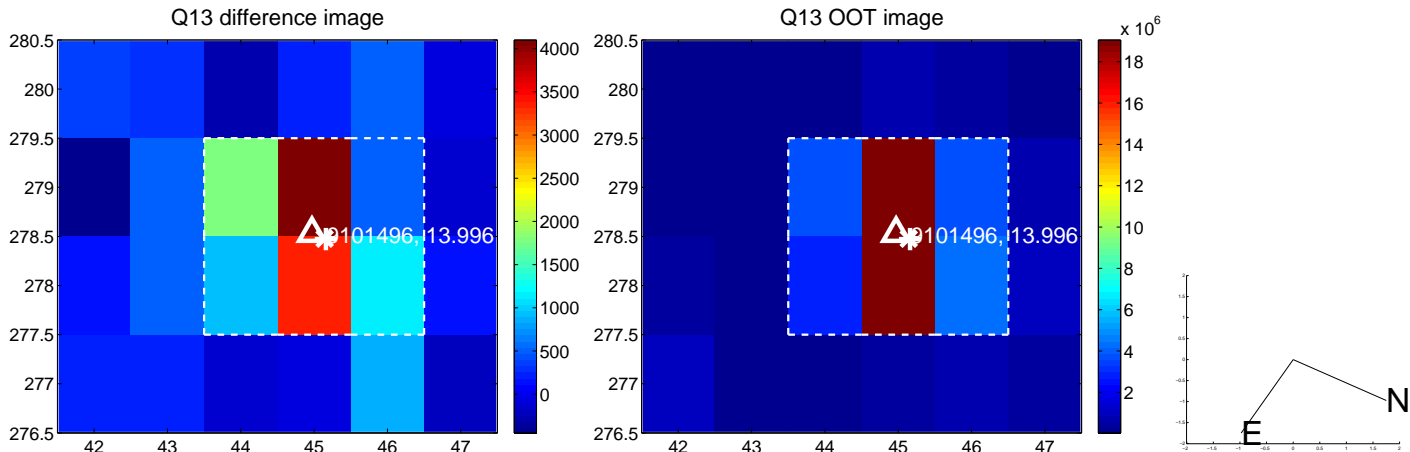
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



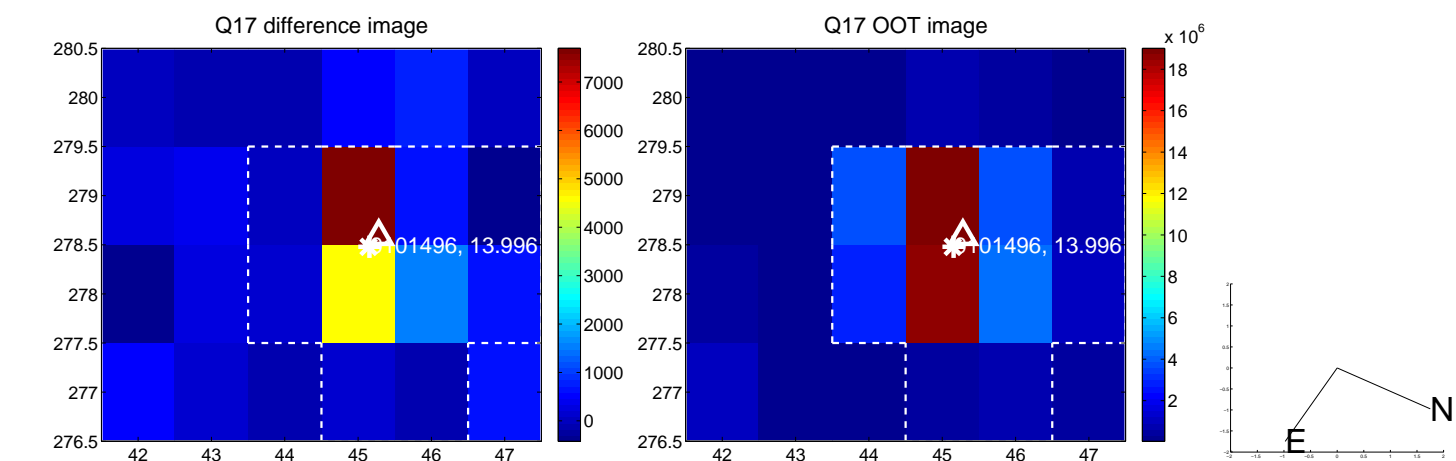
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



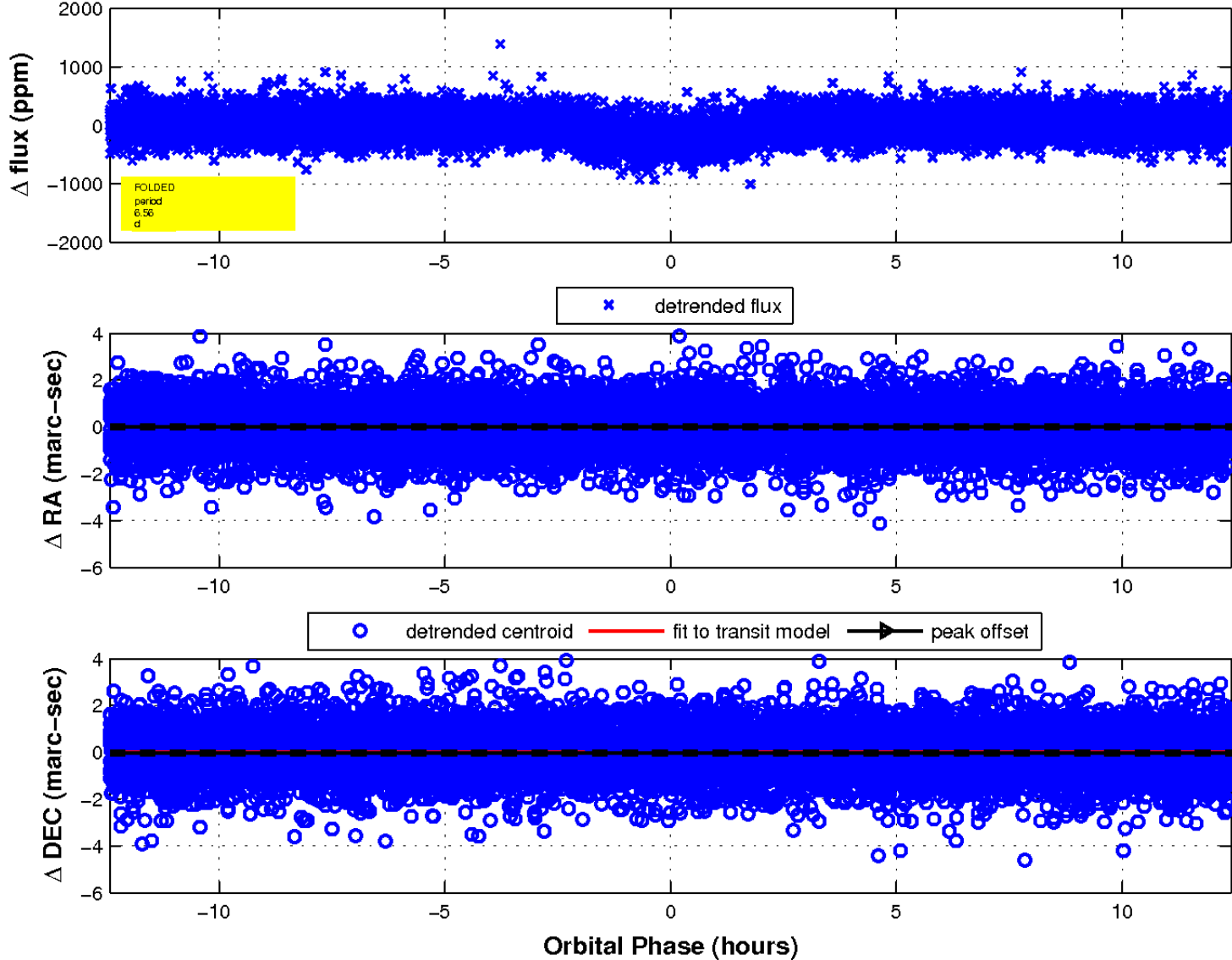
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

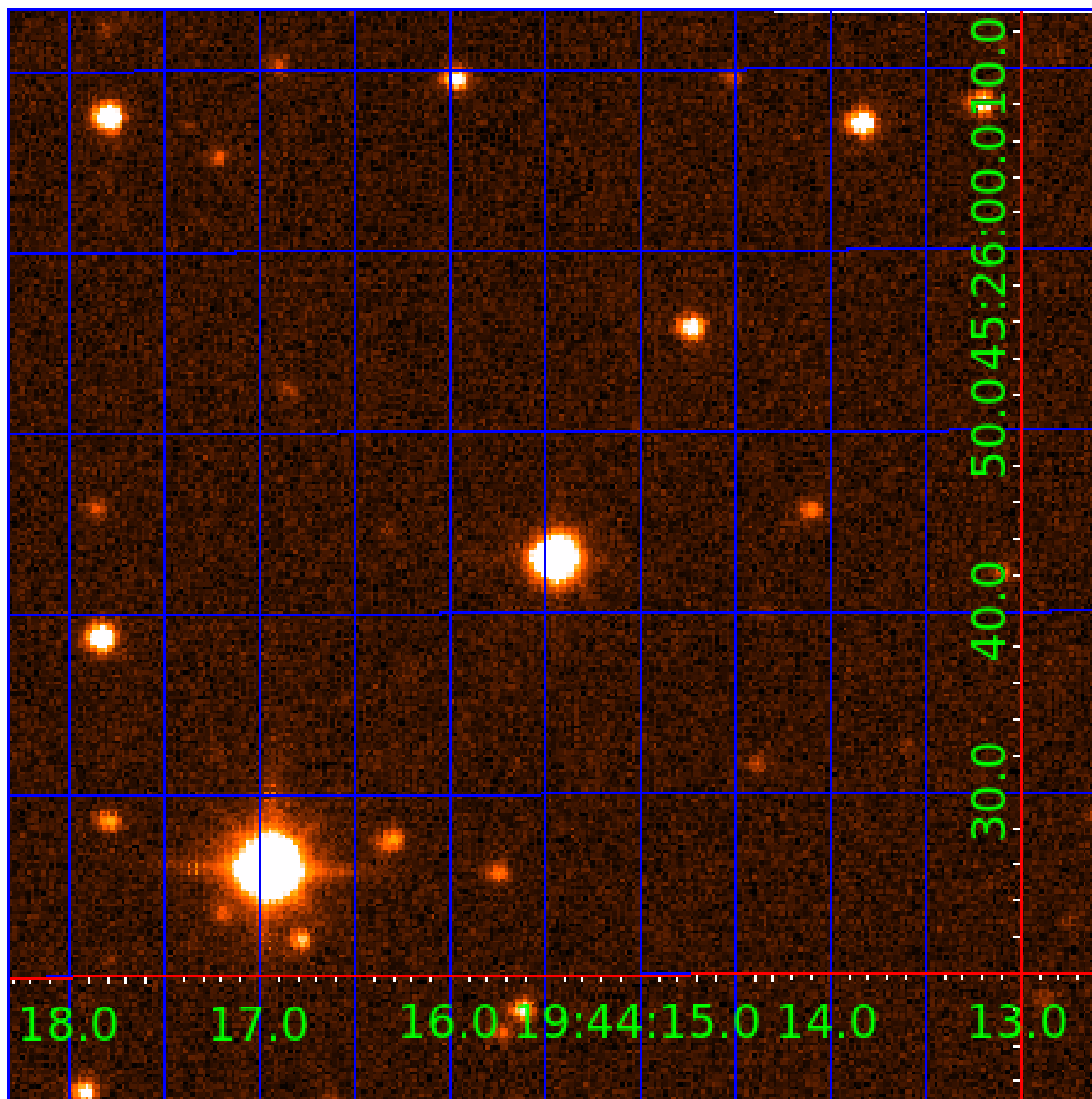


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009101496

Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R_{\star} (R_{\odot})	T_{\star} (K)	R_p (R_{\oplus})	S_p (S_{\oplus})
009101496-01	OBS	1915.01	6.562258	132.612070	255.0	4.142	33.8	36.6	1.81	5878	3.41	656.42
009101496-02	OBS	1915.02	67.845412	149.488324	236.0	12.171	11.2	12.3	1.81	5878	3.04	29.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009101496-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009101496-02	OBS	PC	0.81	0	0	0	0	NO_COMMENT

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

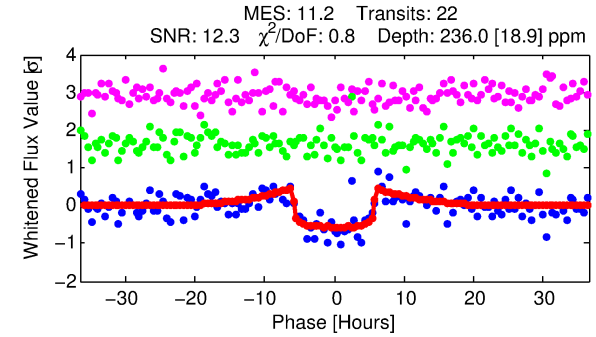
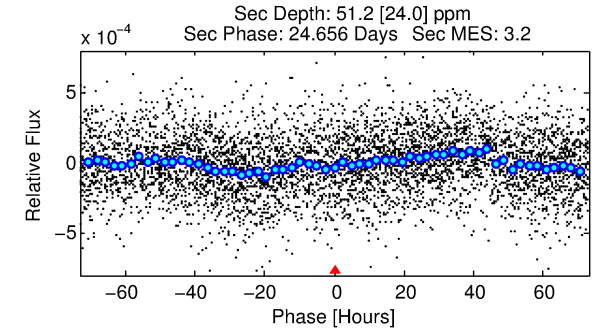
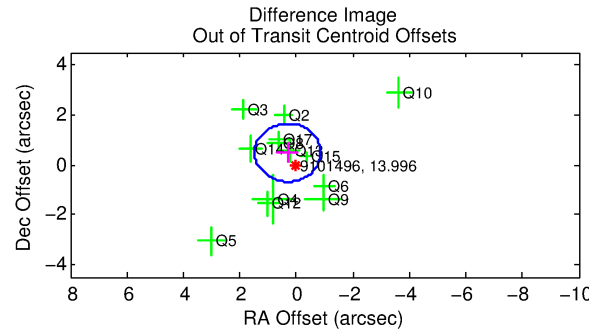
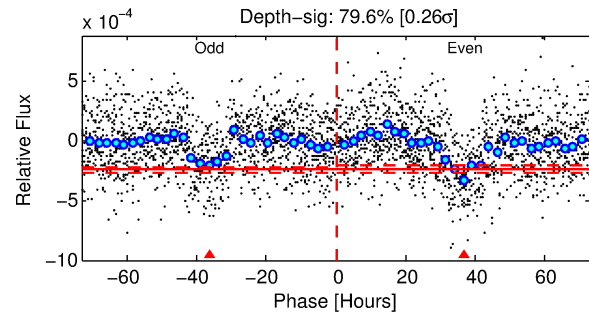
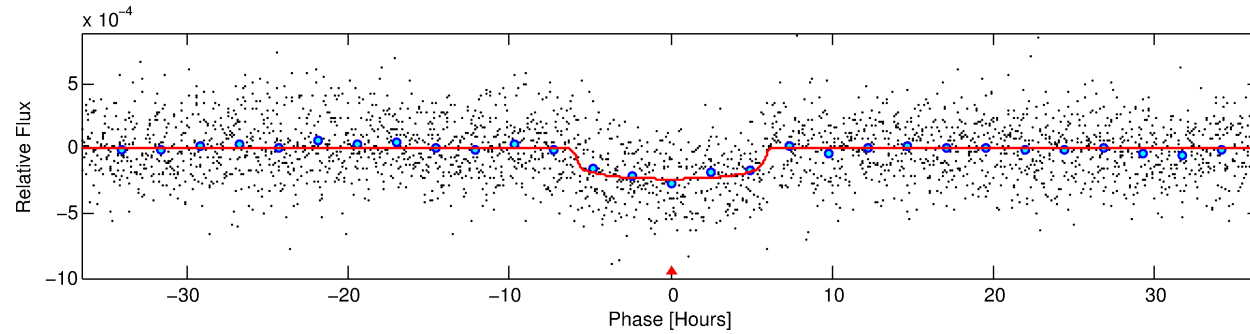
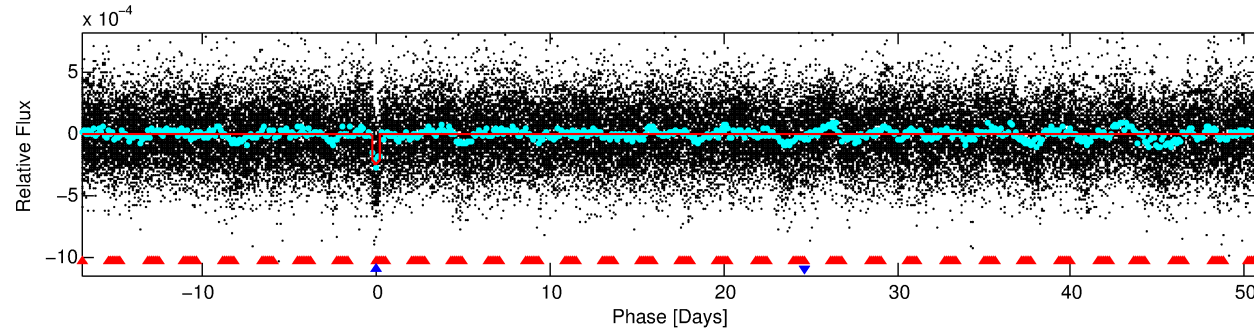
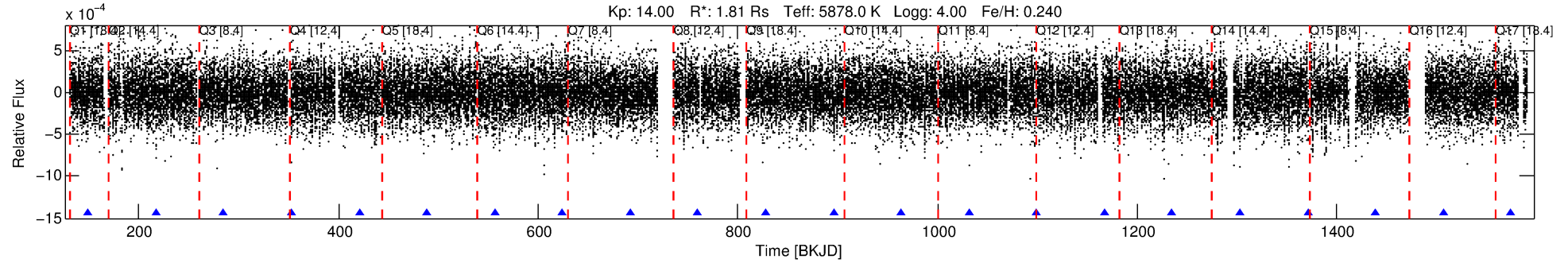
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009101496-02

No Significant Match Found

DV One-Page Summary

KIC: 9101496 Candidate: 2 of 2 Period: 67.845 d
KOI: K01915.02 Name: Kepler-335c Corr: 0.994



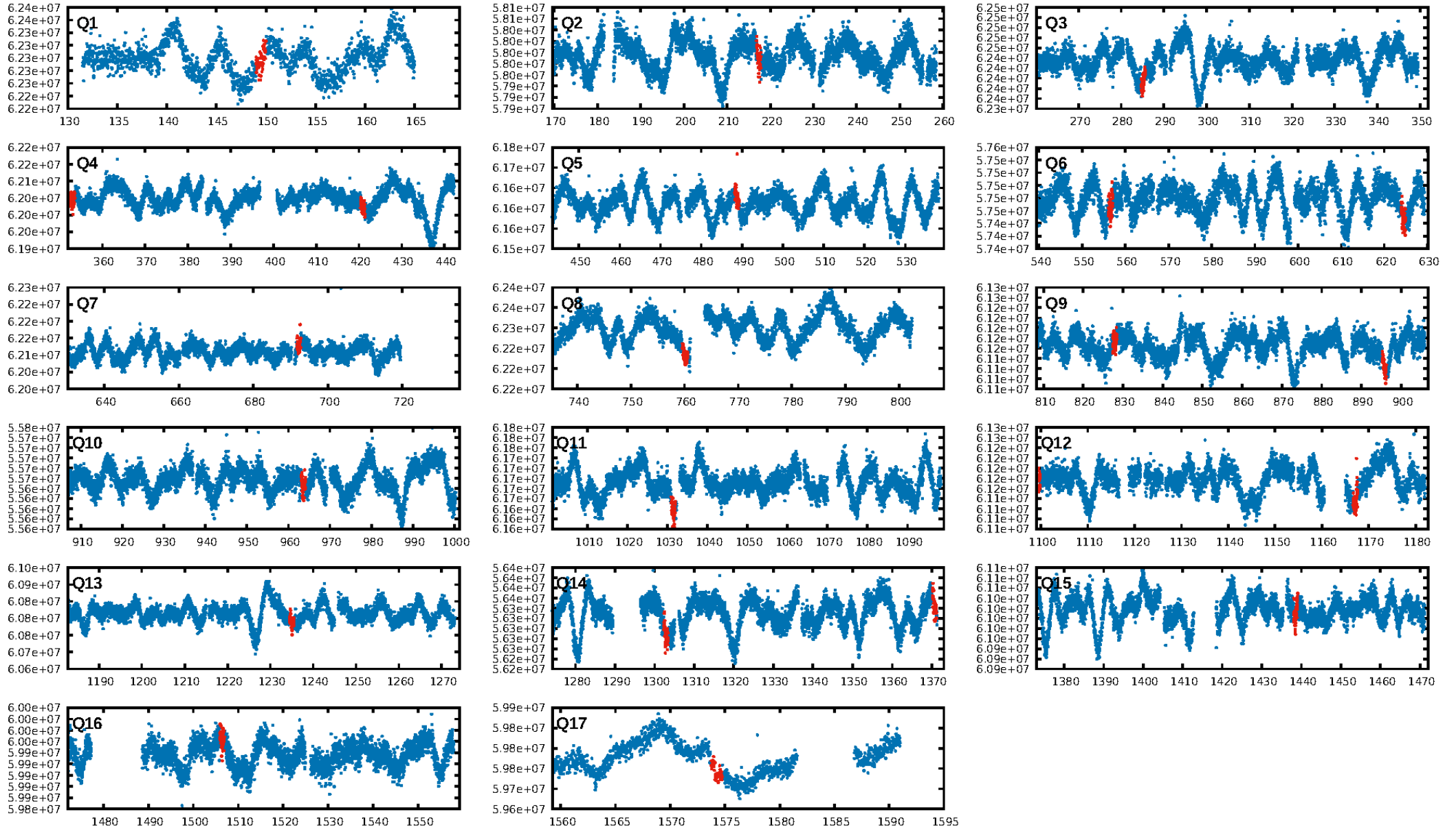
DV Fit Results:

Period = 67.84541 [0.00074] d
Epoch = 149.4883 [0.0092] BKJD
Rp/R* = 0.0154 [0.0034]
a/R* = 28.45 [27.34]
b = 0.76 [0.53]
Seff = 29.14 [10.31]
Teq = 592 [52] K
Rp = 3.04 [1.02] Re
a = 0.3471 [0.0783] AU
Ag = 367.23 [267.86] [1.37 σ]
Teffp = 4010 [649] K [5.25 σ]

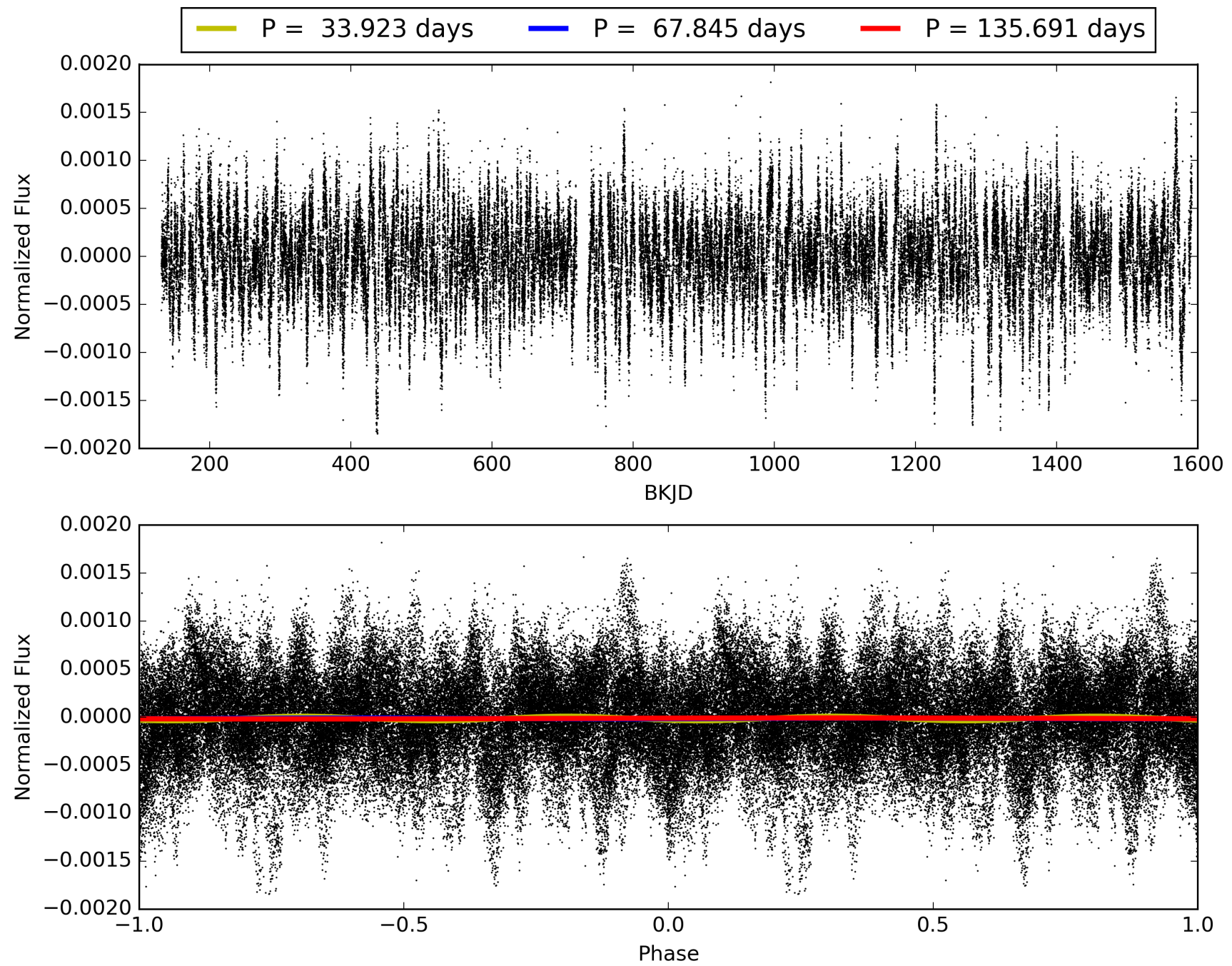
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [114.41 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 87.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.00e-27
RollingBand-fgt: 1.00 [20/20]
GhostDiagnostic-chr: 3.379
Centroid-sig: 4.4%
Centroid-so: 0.890 arcsec [1.38 σ]
OotOffset-rm: 0.575 arcsec [1.48 σ]
KicOffset-rm: 0.644 arcsec [1.61 σ]
OotOffset-st: 4/2/3/4 [13]
KicOffset-st: 4/2/3/4 [13]
DiffImageQuality-fgm: 0.77 [10/13]
DiffImageOverlap-fno: 0.71 [10/14]

TCE 009101496-02, PDC Light Curves

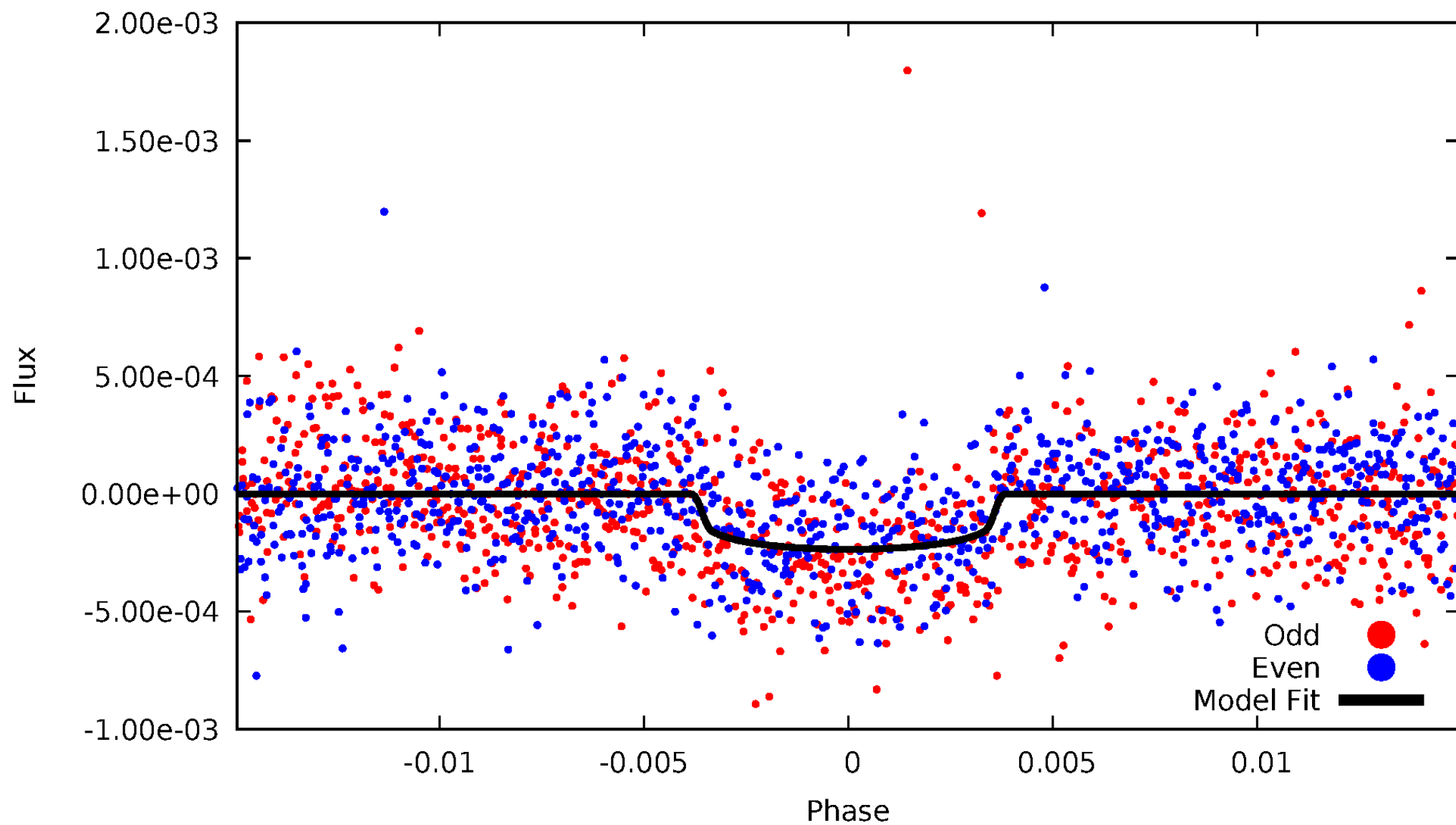


TCE 009101496-02



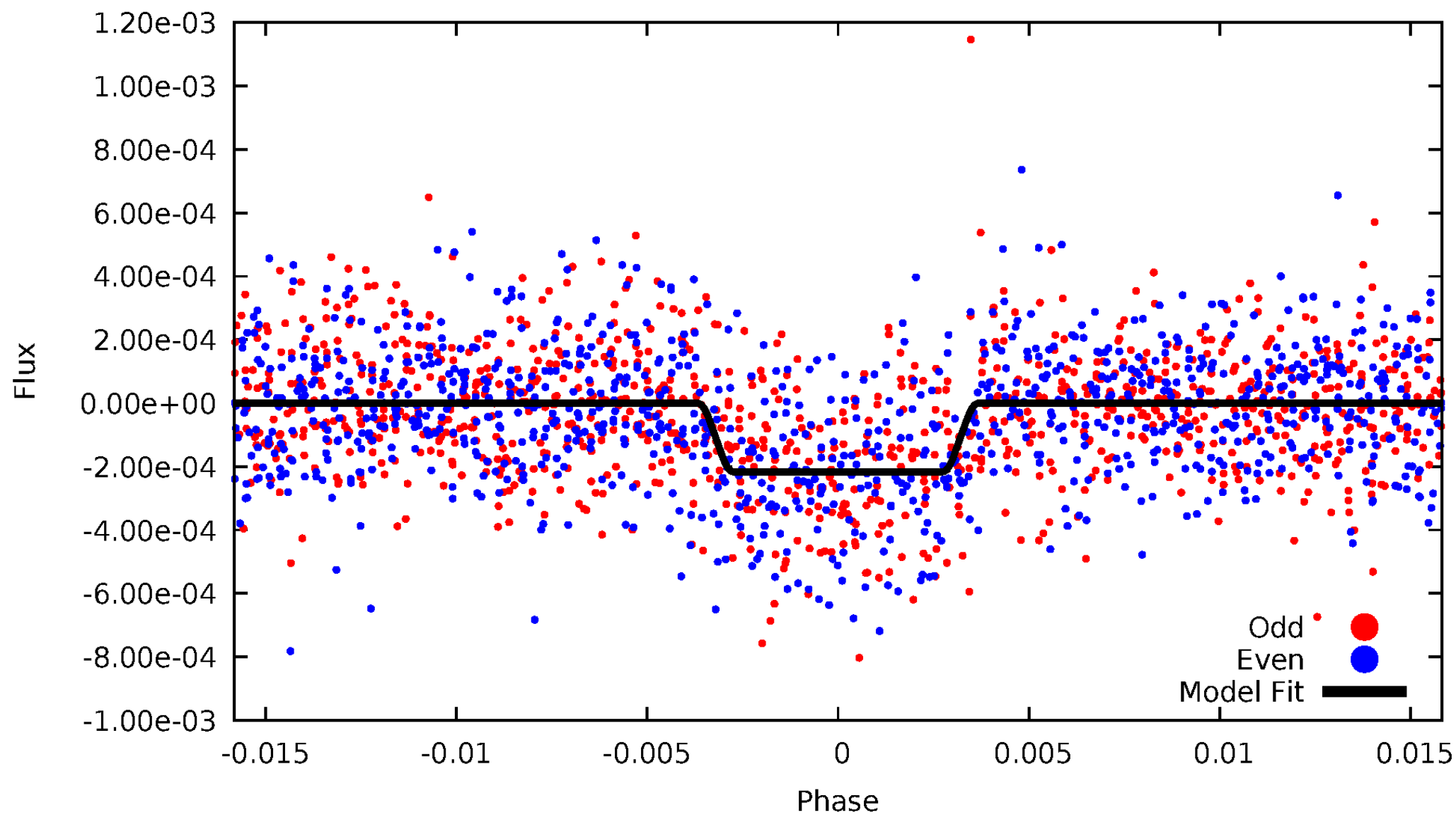
DV Odd/Even

TCE 009101496-02



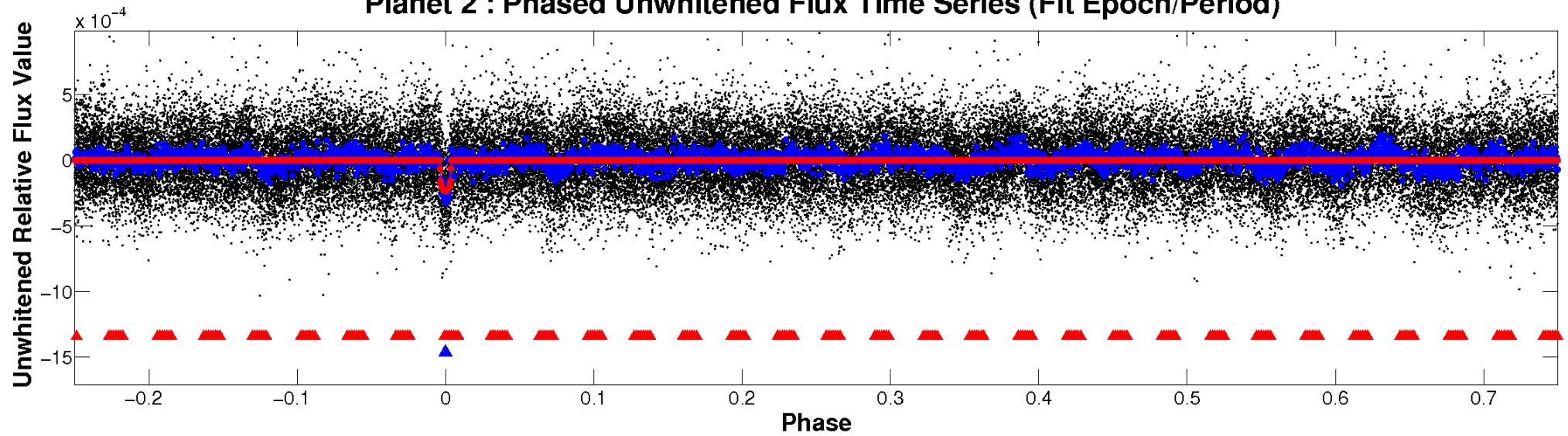
ALT Odd/Even

TCE 009101496-02

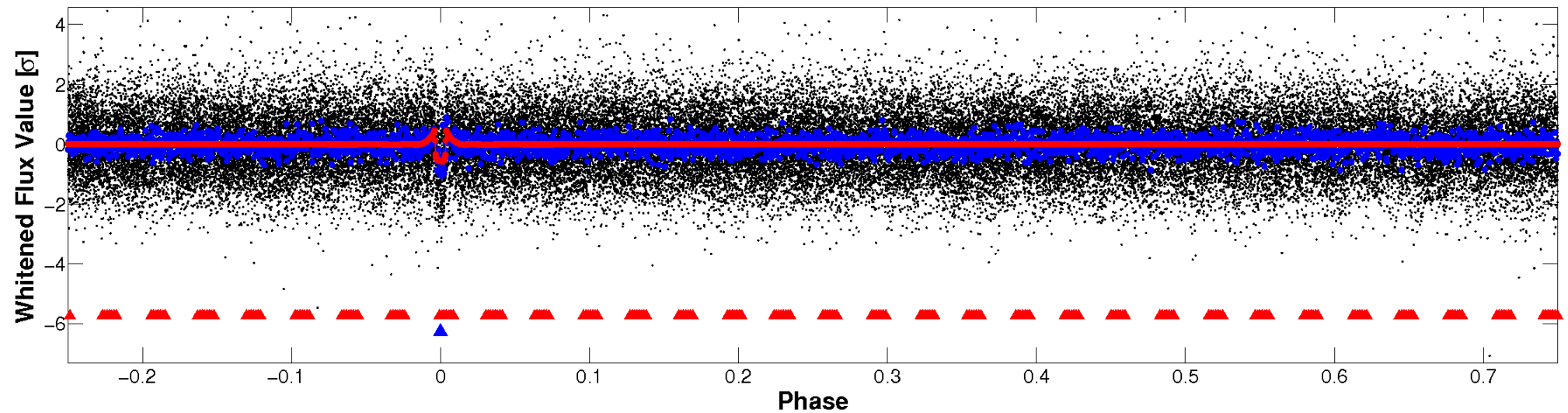


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

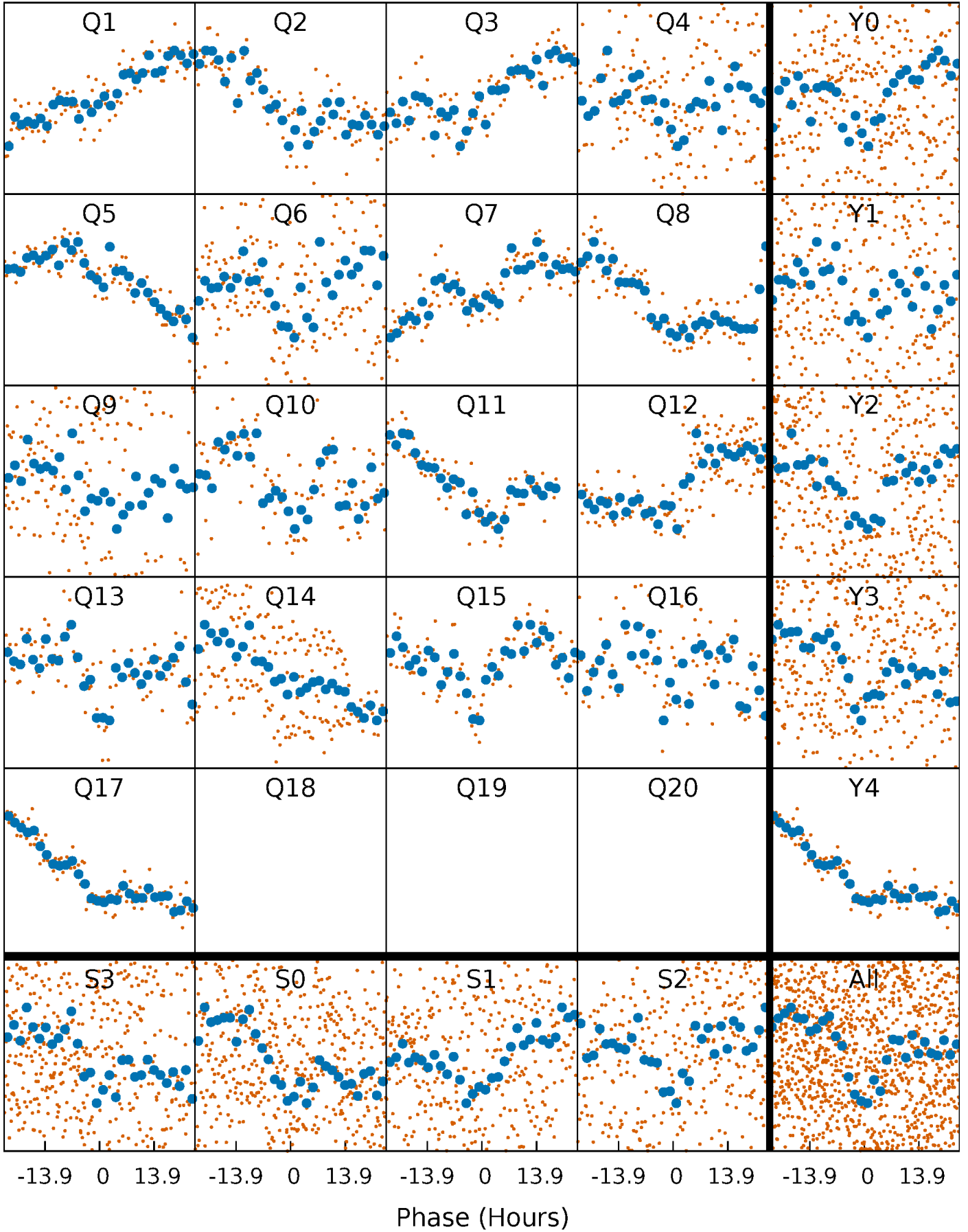


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



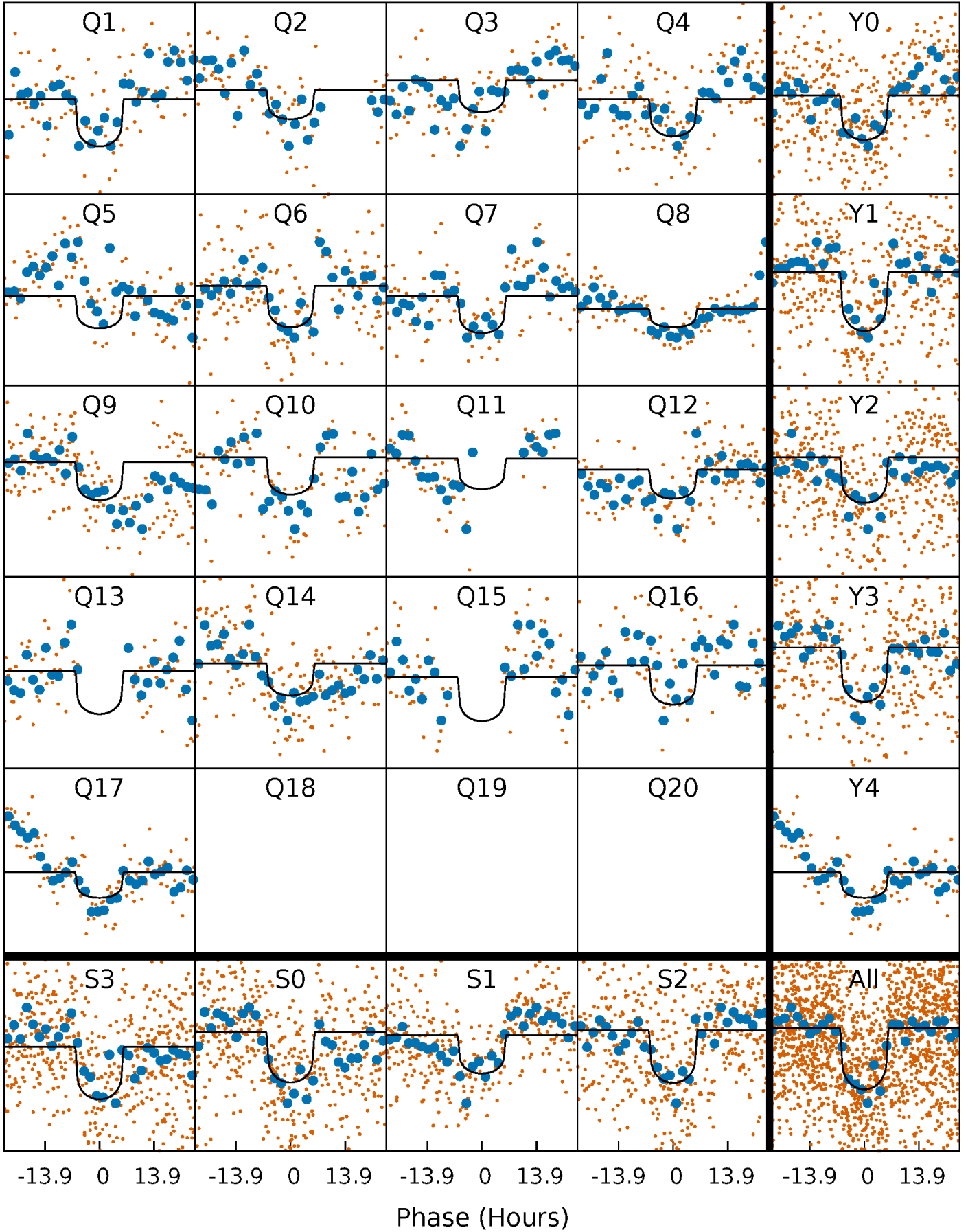
PDC Quarter-Phased Transit Curves

TCE 009101496-02 P= 67.845412 Days $T_0=149.488324$ (BKJD)



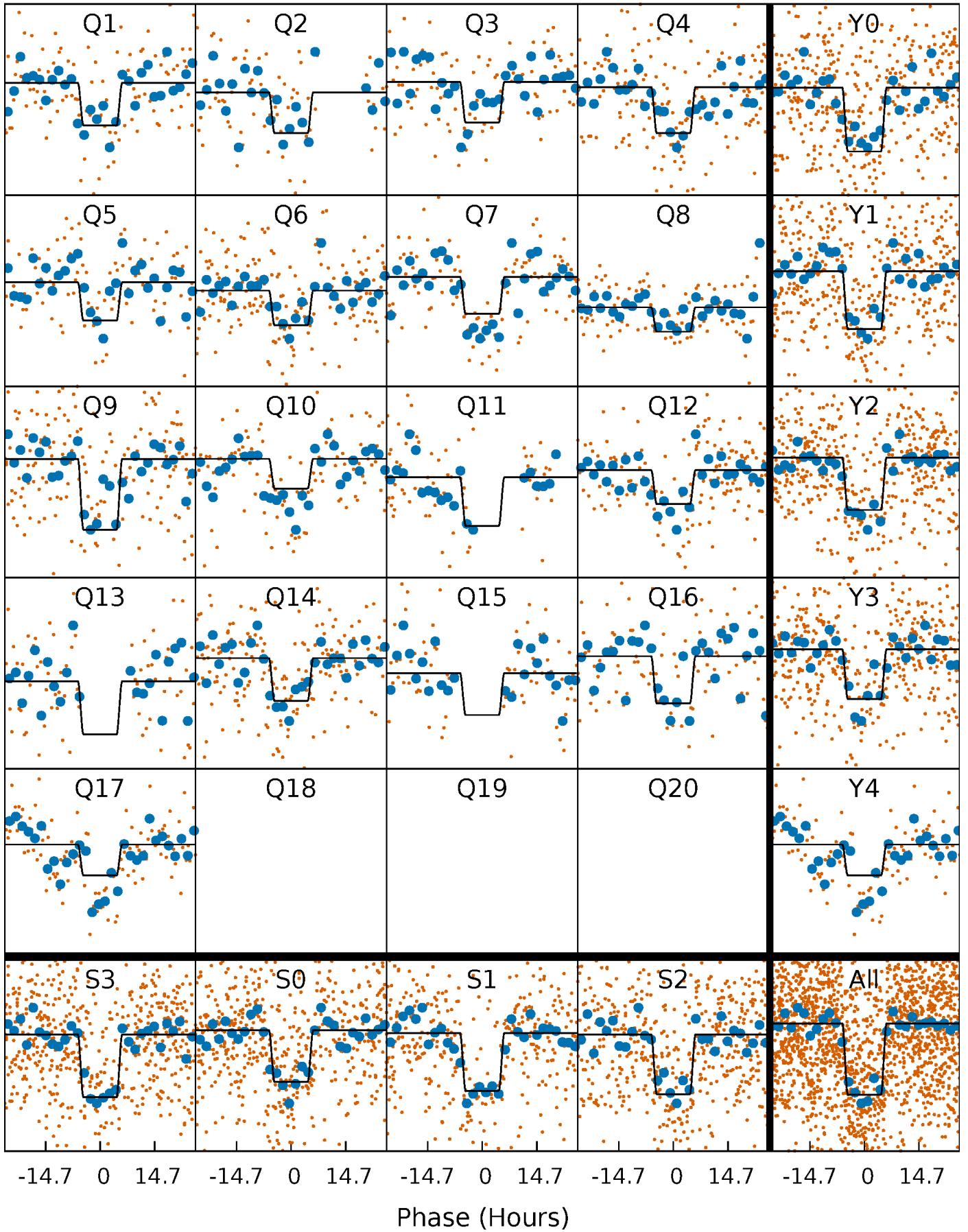
DV Quarter-Phased Transit Curves

TCE 009101496-02 $P = 67.845412$ Days $T_0 = 149.488324$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

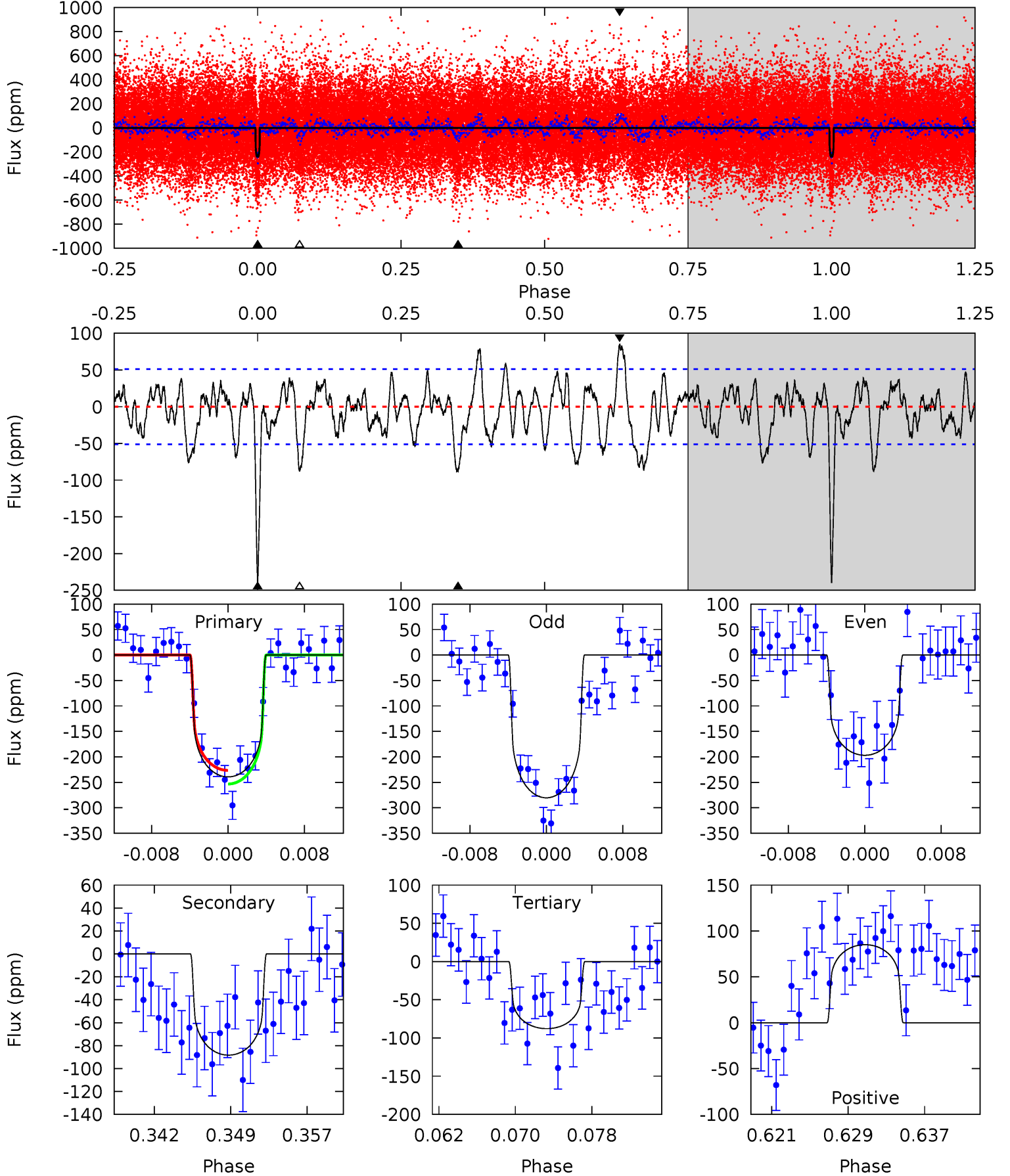
TCE 009101496-02 P= 67.843378 Days $T_0=149.503865$ (BKJD)



DV Model-Shift Uniqueness Test

009101496-02, P = 67.845412 Days, E = 81.642912 Days

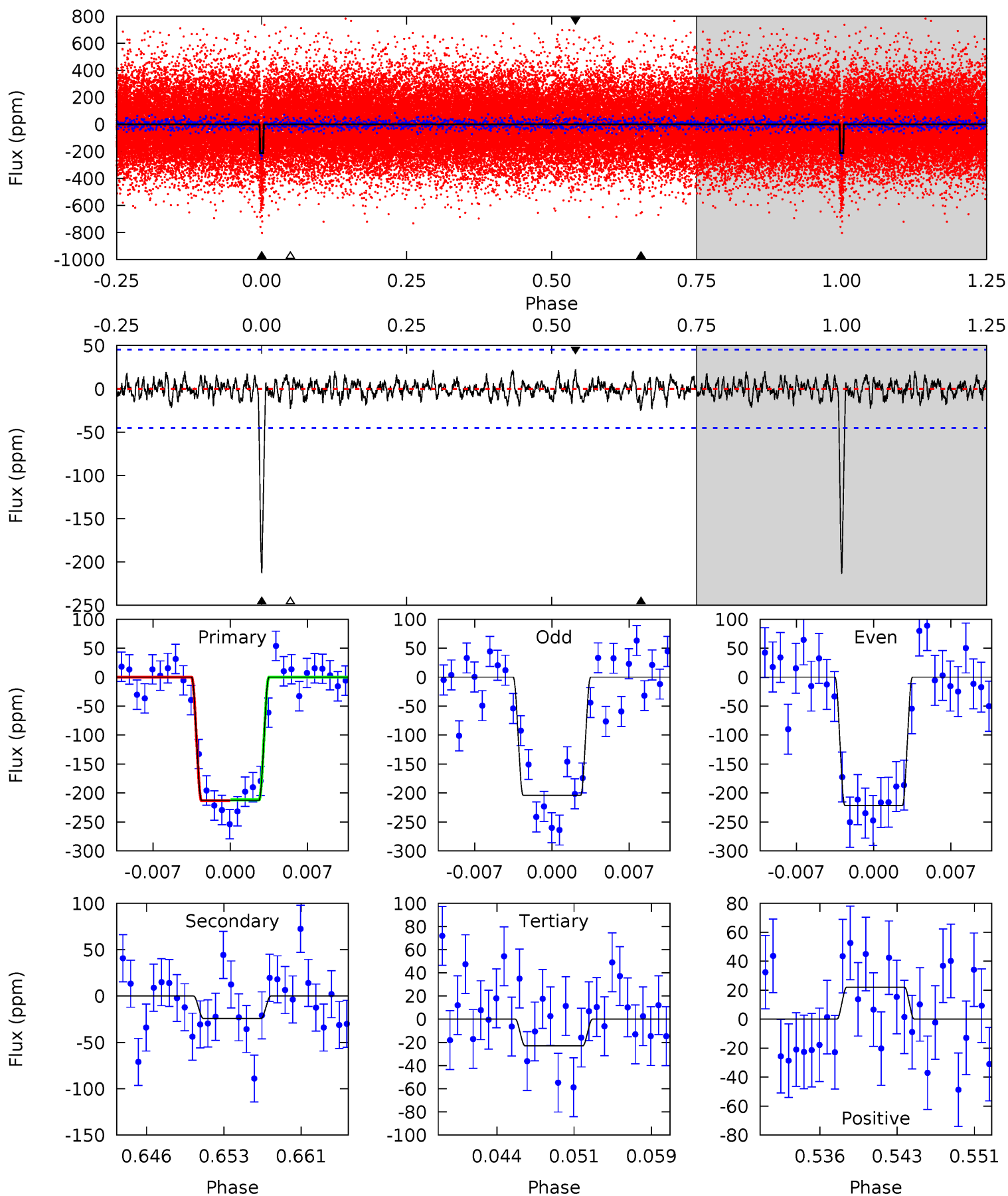
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.7	8.76	8.71	8.44	5.07	2.66	3.08	15.0	15.3	0.05	0.33	4.15	0.96	0.26	1.33



Alt Model-Shift Uniqueness Test

009101496-02, P = 67.843378 Days, E = 81.660487 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.9	2.72	2.59	2.49	5.09	2.68	0.86	21.3	21.4	0.13	0.23	0.99	1.00	0.09	0.08



Stellar Parameters For KIC 009101496

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5878^{+117}_{-117}	$4.005^{+0.196}_{-0.084}$	$0.240^{+0.150}_{-0.100}$	$1.812^{+0.281}_{-0.457}$	$1.212^{+0.133}_{-0.133}$	$0.287^{+0.314}_{-0.078}$
	+2%/-2%	+5%/-2%	+62%/-42%	+16%/-25%	+11%/-11%	+109%/-27%
Source	SPE58	SPE58	SPE58	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009101496-02 / KOI 1915.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-88 ± 10	$2.94^{+0.69}_{-0.69}$	816^{+41}_{-48}	4739^{+503}_{-368}	691^{+469}_{-247}
Alt.	-24 ± 9	$2.83^{+0.72}_{-0.77}$	821^{+35}_{-48}	3774^{+461}_{-361}	201^{+196}_{-99}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

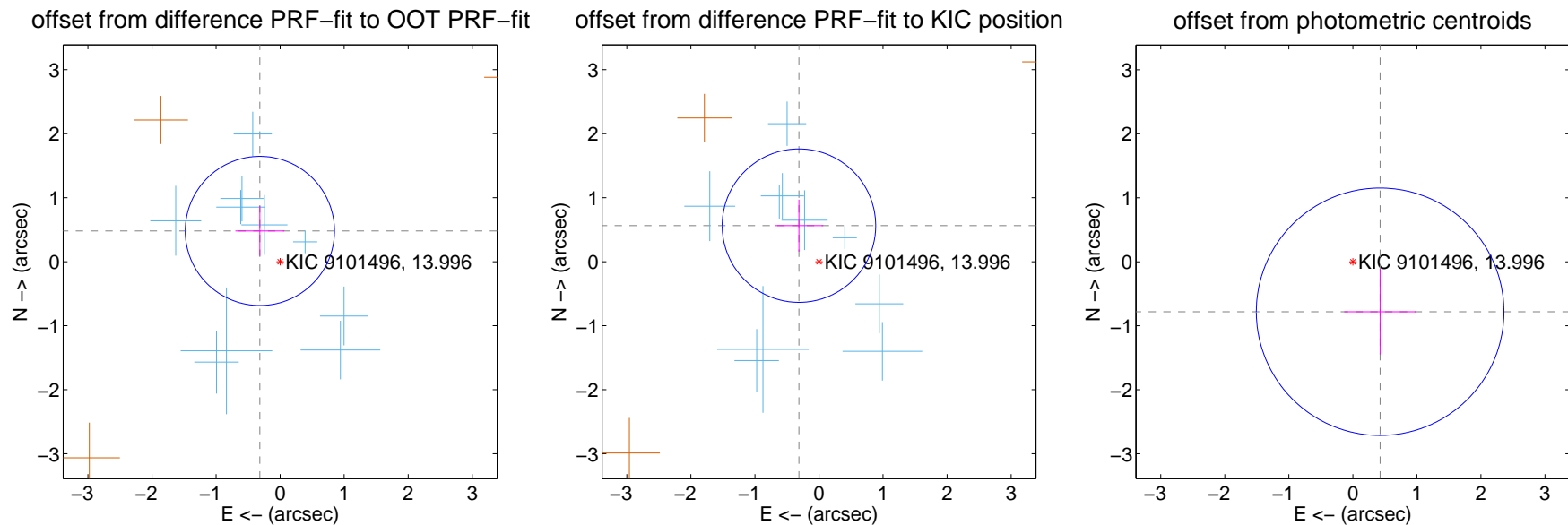
DV Centroid Data

Supplemental centroid analysis for 009101496-02. Kepler magnitude: 14.00. Transit SNR 12.31

There are 10 quarters with good PRF difference image offsets

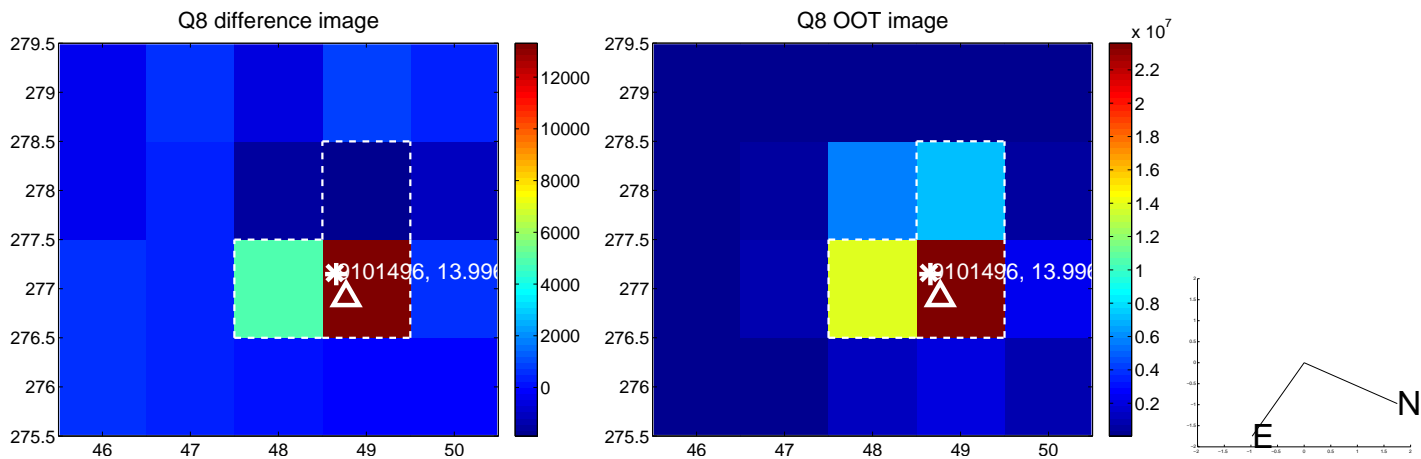
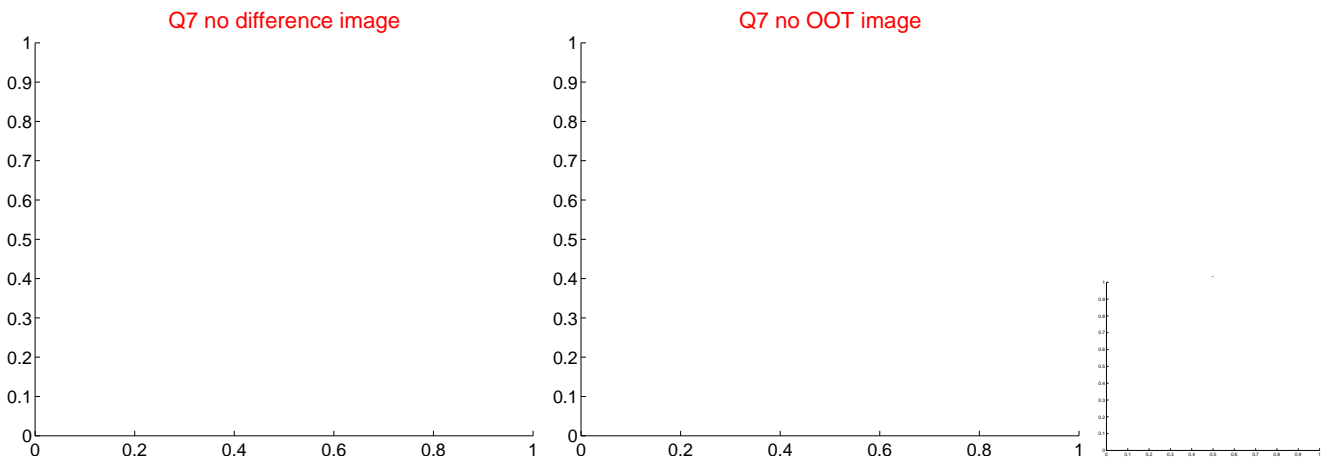
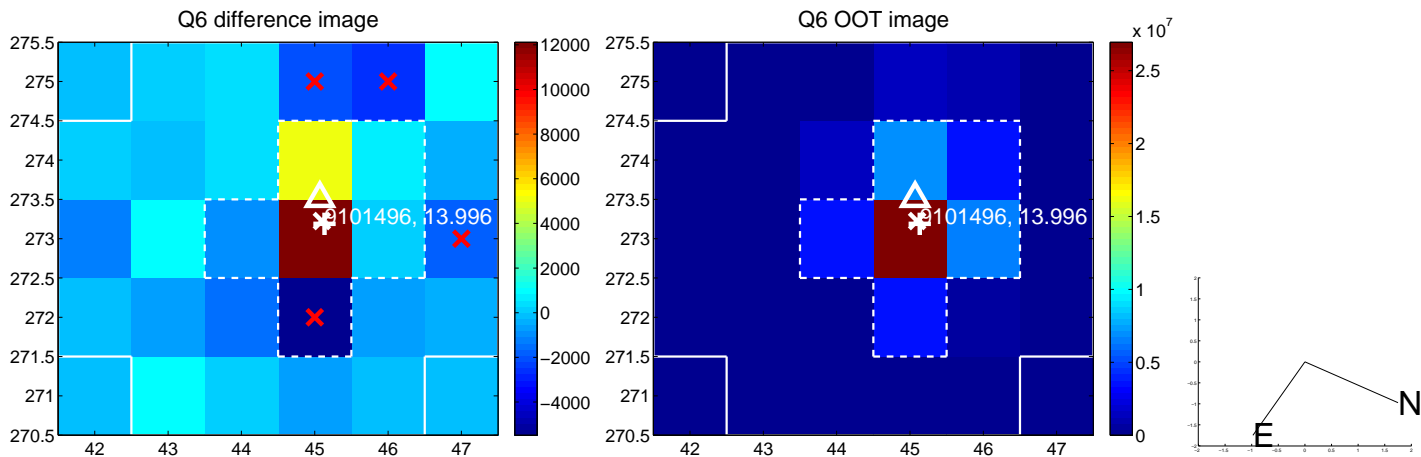
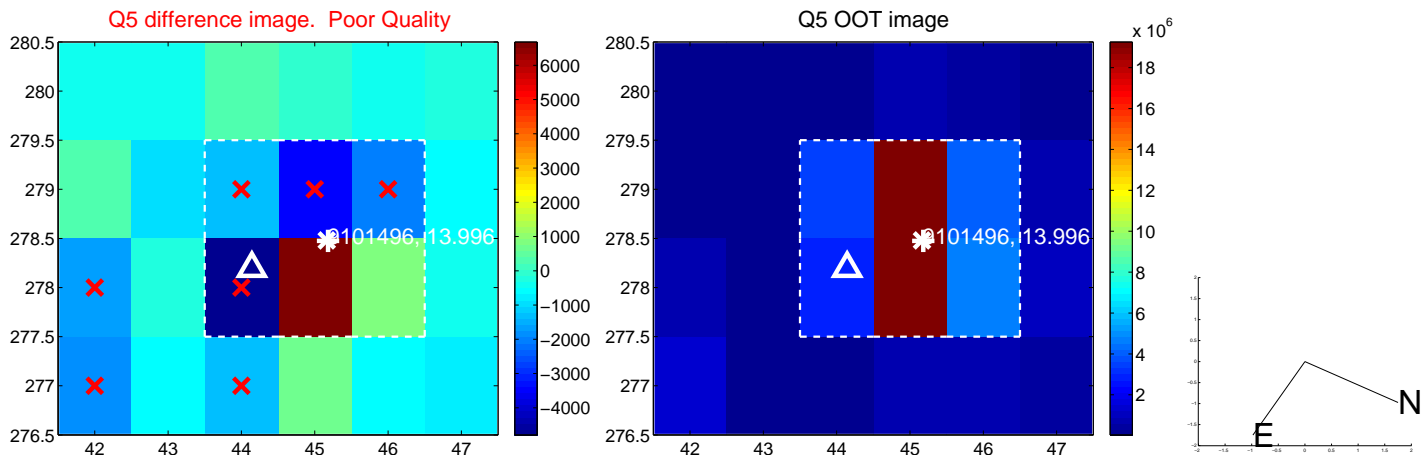
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.575 ± 0.388	1.48	0.316 ± 0.382	0.480 ± 0.391
PRF-fit source offset from KIC position	0.644 ± 0.399	1.61	0.313 ± 0.380	0.563 ± 0.405
photometric centroid source offset	0.89 ± 0.64	1.38	-0.43 ± 0.56	-0.78 ± 0.67

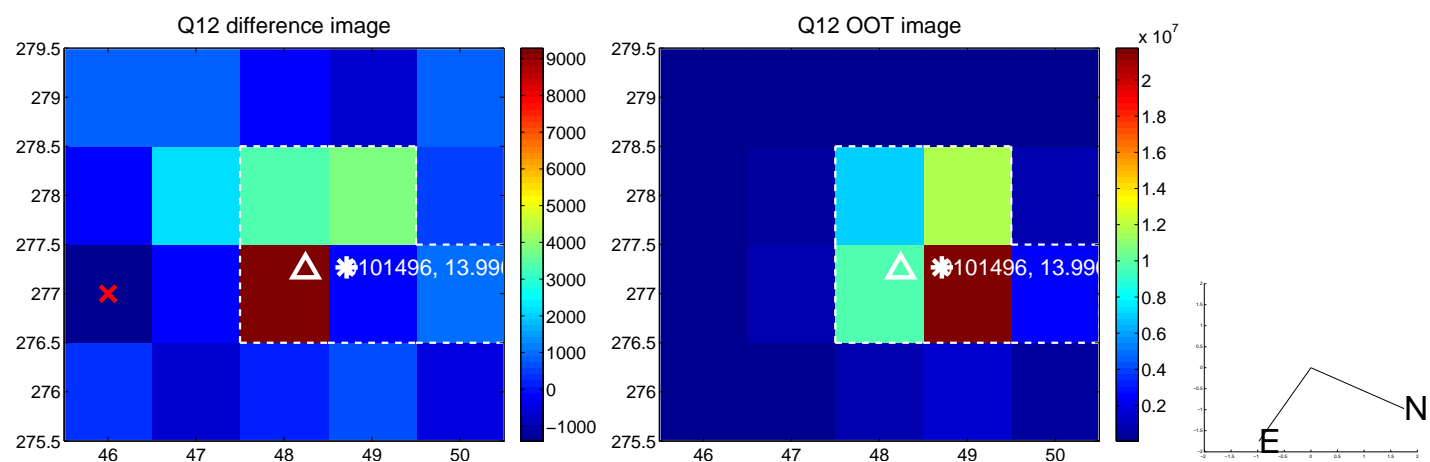
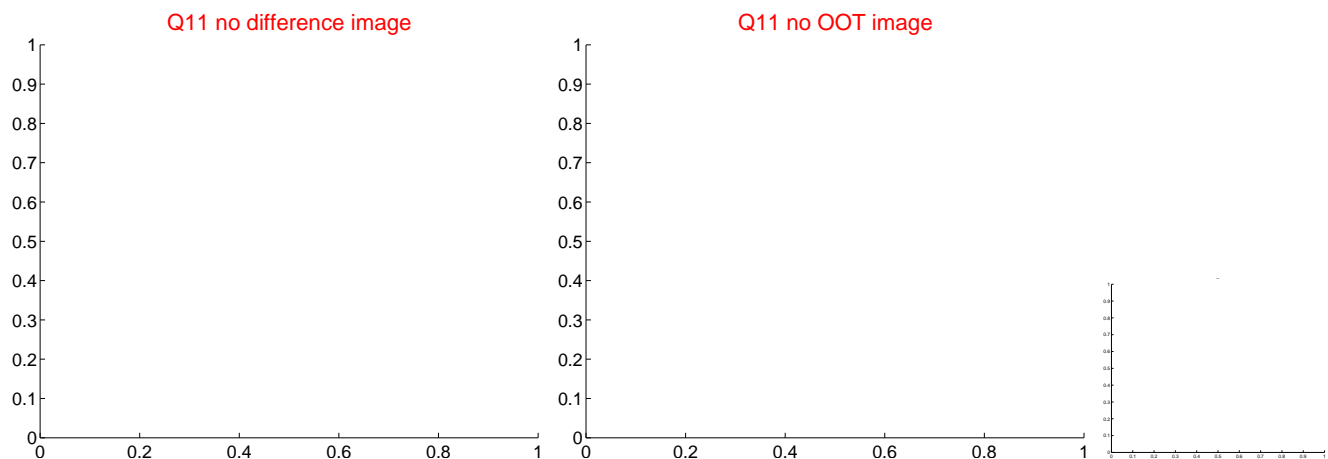
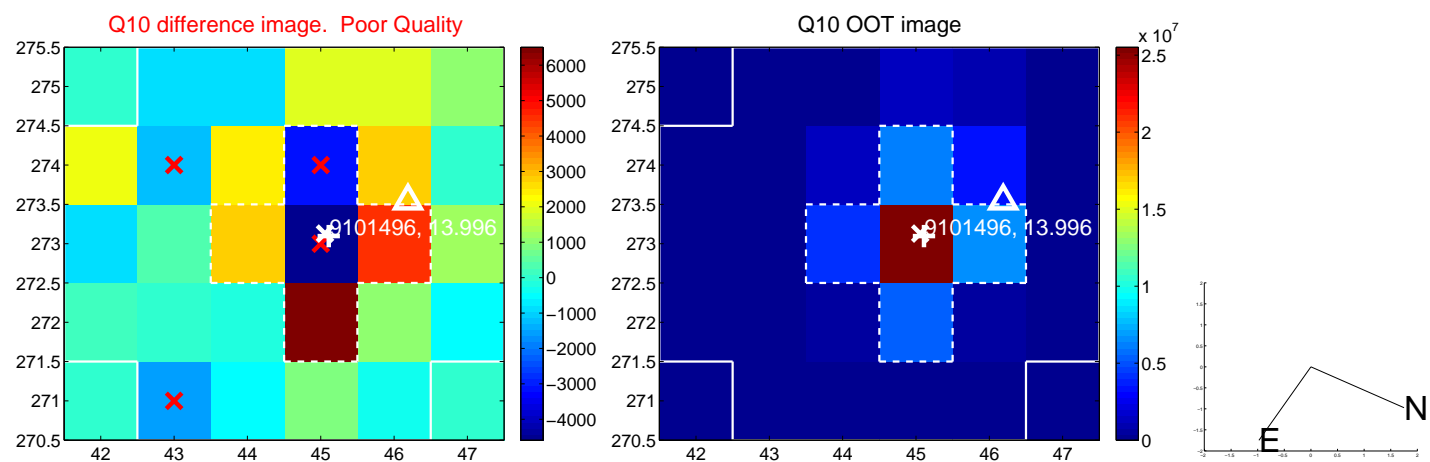
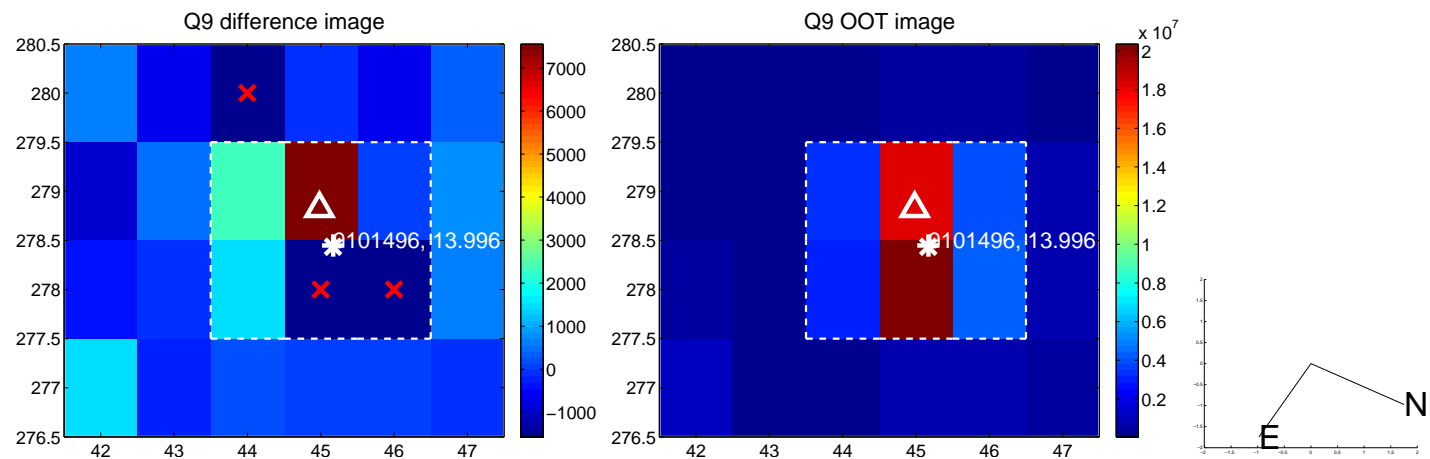


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

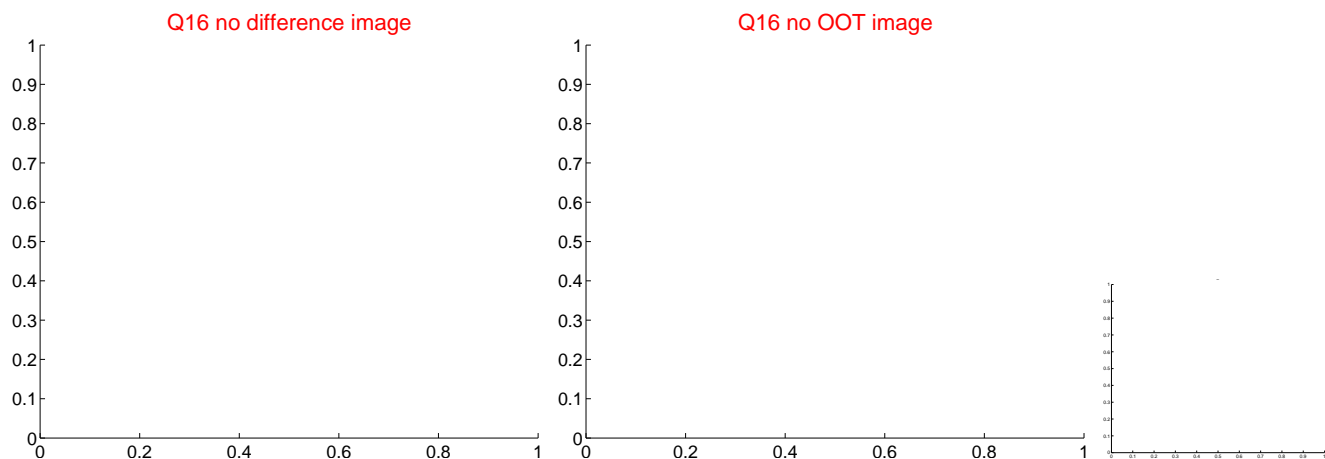
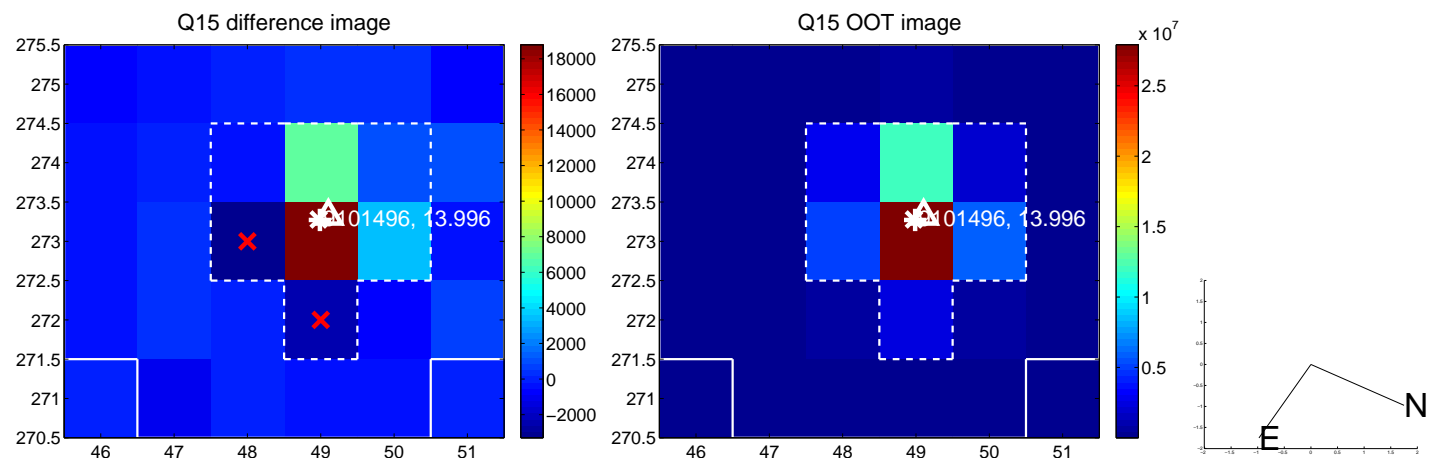
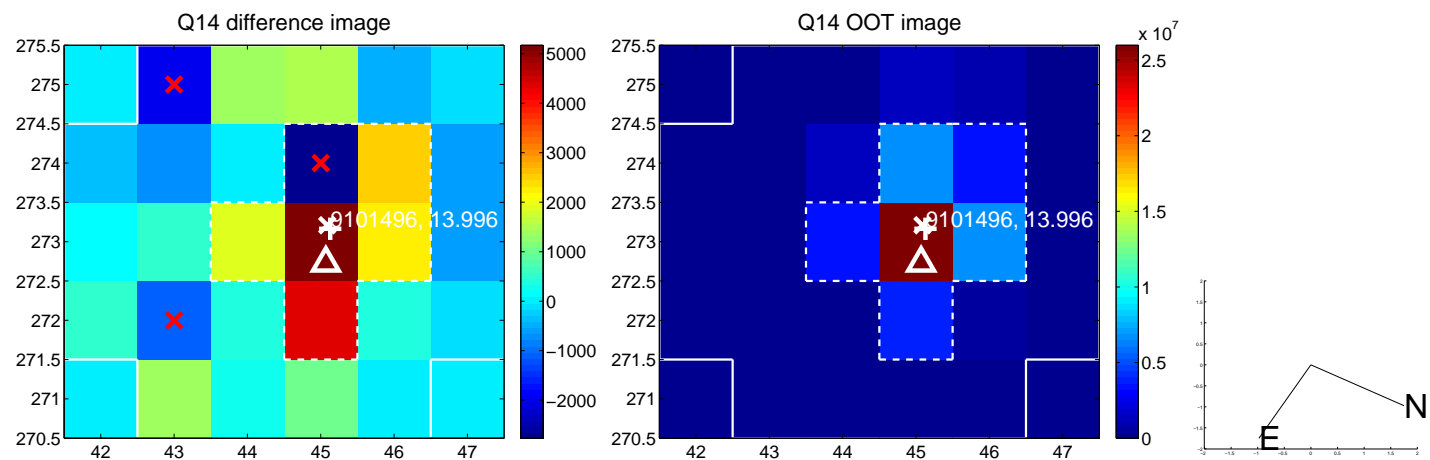
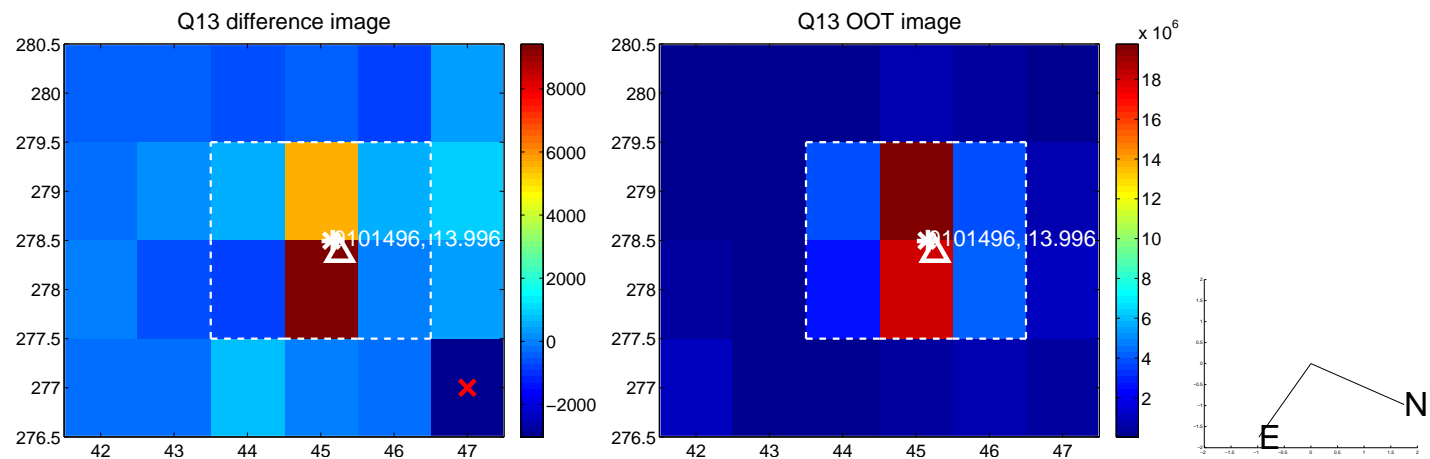
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



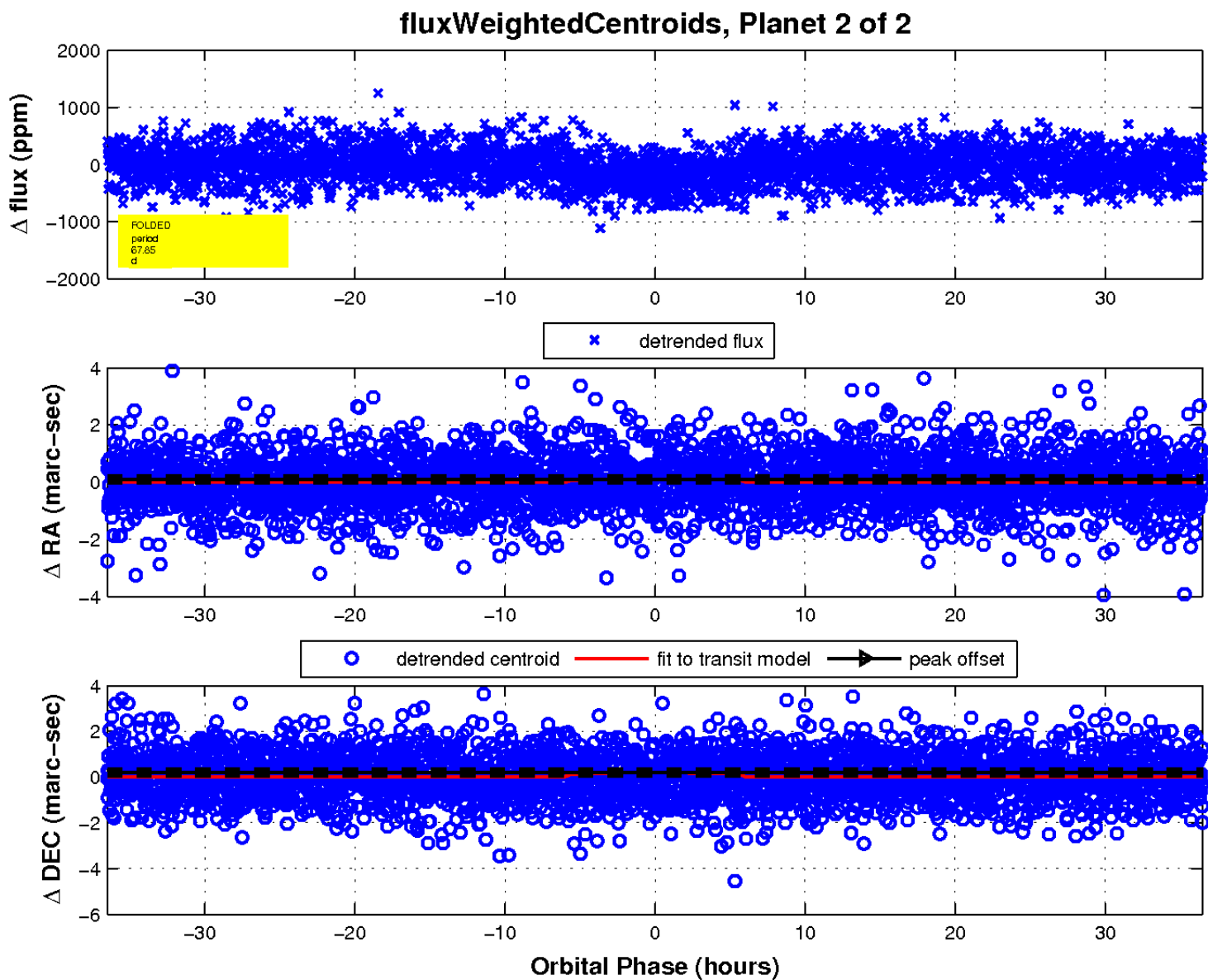
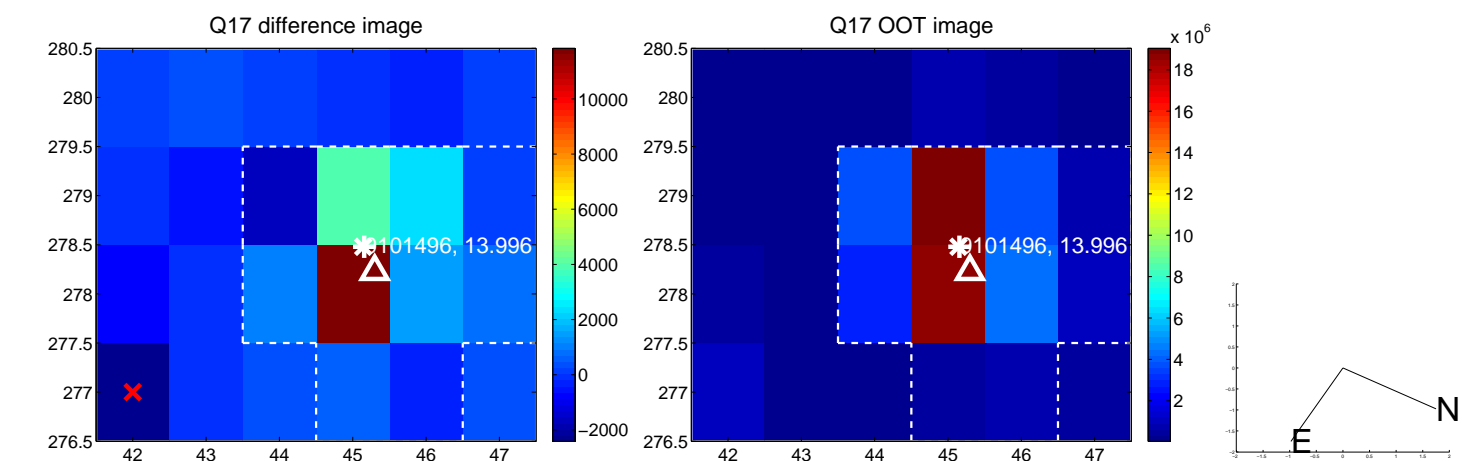
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

